POPULAR Computing WEEKLY

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Christmas Double Issue 18–31 December 1986

Vol 5 No 51

SPECIAL supplement

Computer graphics
Includes Amstrad's video digitiser and latest ST and Spectrum art packages

Atari's new ST out now



see page 4

FEATURES

Readers' Poll awards – the results from your votes

Now that's what I call software . . . favourite programs from the micro industry

Popular trivia quiz

Review of the Year

REVIEWS

From Ocean, Top Gun, the game of the film (left)
Cascade's Skyrunner
Imagine's Terra Cresta





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Scalextric (top) Top Gun (below)

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Atari's new ST on sale before Christmas

ATARI S new 520STFM with built in disc drive is here and is to retail at £459, which, according to Tony Dean of Atari distributor Silica Shop, represents a reduction of around £40 on the price of a system combining old-style 520 and external disc drive. Although it's effectively the same price point as Atari's price promotion pack A. This pack originally introduced as part of a summer promotion, has now been discontinued.

The new machine will, however, be in short supply until January. Several hundred recently become available at Atari's factory in Taiwan, and Dean claims to have bought the lot and air freighted them to this country. Dean sees the 520STFM as taking over from the old style 520 as the biggest selling of the machines although the latter will remain on the market for people who want to put it together with a 1Mb drive.

Although ostensibly the 520STFM is simply a 520 recased with an integral drive it appears to be more than that. "It's obviously a completely redesigned machine" says Dean. As Atari has modified the ST series the circuit boards have become progressively messier, but despite this the new model has a completely clean board.

Not one modification has been found by our technical boys.


The new 520STFM

Socketed chips are also clipped into place, so should not work loose in transit. Of a batch of 200 tested by Silica, Dean claims that only one failed, and hopes that this increase in reliability will help sales.

The pricing of the new machine places the cost of an entry-level system of ST disc drive and mono monitor at £612 some £80 over a comparable Amstrad PC system (although the ST will drive a TV so getting started arguably costs £69 less than with the Amstrad) but Dean disputes suggestions that Atari will cut prices below Amstrad's in January, and is particularly perplexed by the antecedents of this week's rumour that the price of the old 520 will go down to £199.

Atari's new general manager Bob Gleadow, is expected to announce a new pricing structure in January but granted Silica is already selling the STFM at £459 it seems unlikely now that any changes will be particularly radical.

Budget accounts software gets more support

TECHNOLOGY Software has extended its installation support on its Dac Easy range of products to one year's free hotline support. This will be valid on *Dac Easy Accounting* its £129.99 accounting package, *Dac Easy Base* the £59.99 relational database, and further products to be added to the range in the near future.

Details from Technology Software, Hallams Court, Blackheath, Guildford, Surrey GU4 4QZ (0483 898140)

Amstrad sets January date for US launch of its PC 1512

AMSTRAD has fixed the Las Vegas Consumer Electronic Show on January 9 for the US launch of its PC1512. The news came at a press conference held in Dallas last Friday by Amstrad's US subsidiary, Amstrad International.

Amstrad will not however be directly committing its own resources to the US market. Dallas based computer and office equipment supplier Vidco has been appointed as sole US distributor for the PC and according to Amstrad chairman Alan Sugar will be paying in advance for all PCs shipped to the States. Vidco will also handle the machine's marketing.

The arrival of the PC will be the major acid test for Amstrad in the US. The company has previously attempted to sell the 464, 6128 and PCW there, but the market has so far shown little sign of being impressed either by CP/M or the 3 inch disc.

Correction

An error crept into our recent review of FontGen. Original supplier Gemini is now in receivership but the product is available from Digita International, Kelsay House, Barnes Road, Budleigh Salterton EX9 6HJ (03954 5059)

Gold abandoned as Microprose goes solo with simulations

MICROPROSE, the software company famed for its simulation products, has ended it's relationship with US Gold.

US Gold has been selling Microprose's titles in the UK for some two years now, but as from January 1, Microprose will be taking over the whole range.

John Tweedy, Microprose UK's sales manager said: "The separation from US Gold is entirely amicable, for we appreciate the great job they have done for us in the past. We simply feel that we can devote a proportionately larger amount of support to our product than was the case with US Gold."

Microprose is now to increase its staff in the UK to 15, and will alter the packaging of its titles to give greater prominence to the Microprose logo.

Communicator gets sales boost

THE Communicator, Acorn's high powered smart videotex terminal, has finally achieved breakthrough in the shape of two major orders. Acorn is selling a minimum of 1,400 machines to Pickfords Travel for use in its 850 high street branches while Thorn EMI Business Communications is to badge an initial 500 of the machines for supply to its own customers.

The number of units involved is small by the standards of Acorn's traditional home market but if the company can build on these sales the Communicator should prove a useful part of its diversification programme. The Thorn EMI order, although smaller than Pickfords, is probably the more important in the long term.

Thorn is a major supplier of videotex terminals and therefore is well placed to market larger numbers of Communicators. "We certainly see the Communicator as an exciting development for viewdata users," says Steve Brockman, Thorn product manager for data communications. "We have no doubt that our clients will be keen to keep up with the possibilities that the technology offers."

The Communicator itself recently went into full production. It uses a 65SC816 processor, and has 512K Ram expandable to 1Mb, 32K of battery-backed Ram, built in modem and Rom applications software including word processor and spreadsheet.



Acorn's Communicator

Software Hotlines

It's popular for child psychologists to appear on Radio 4 from time to time and make concerned noises about the amount of time young people spend alone in front of a computer playing games/programming/breaking into government computers holding sensitive defence information etc instead of participating in mind expanding social interactions – such as breaking the neighbour's windows. Worry no longer – ROB is here.

ROB (standing for Robotic Operating Buddy) is part of the Deluxe bundle that has been put together by **Mattel** who are handling the **Nintendo** games console in the UK. ROB is planned to be "your interactive friend" who you'll be able to play games with. Yuk.

For your less socially aware moods, an electronic gun (the Zapper) is also included as part of the deal (whatever you do don't point it at ROB, he gets nervous). This also comprises the console, two controllers and bundled cartridges. That's going for £199, but the basic deck plus controllers plus game will be £129 with cartridges selling from £19.90 to £34.90.

If that sounds expensive, **Microdeal** was showing its interactive video disc system for the ST at the recent Atari show. The program itself was called *Journey into the Lair*. Using the same video disc as the *Dragon's Lair* arcade game, it's the same game, but when you come to a decision point, the options (left/right) are flashed up on the screen – you select via mouse – and the action is played out before your very eyes.

Authored using the *VIVA* system which **Microdeal** will be selling separately soon, the program and video disc will set you back £99.95 with the connecting cable coming in at £19.95. That's if you already have a disc player – if not, that's another £499 my son. Ouch.

A Night on the Tiles sounds like a pretty naff title for a game in which you must visit as many pubs as possible in an evening. Losing points for splashing your shoes or committing a social indiscretion that gets you fired. But no – it's an **Odin** title in development that has you playing the part of a cat. Eight out of ten previewers that expressed an opinion said any program you had to tickle under the chin to load would never sell.

Talking of sales, did you ever wonder exactly how many a game had to sell to make it to number one? Software houses tend to get pretty shirty when you try to pin them down to numbers, but if you consider that *Paperboy* – that mega hit on the Speccy – sold around 40,000 on that format alone, you're getting the right idea. When you think Mull of Kintyre sold over two million copies you can see how far the software industry has to go – but on the other hahd, a single only costs £1.50, doesn't it?

John Cook

A Night on the Tiles

Atari results show profit improvement

ATARI'S final quarter figures (to September 30) provide further evidence of the success of the Tramiel rescue plan. In the quarter the company showed worldwide income of $9.1 million (about £6.5 million) on sales of $60 million (about £43 million).

The comparable figures for the entire year are $21.5 million (£15.4 million) profit on sales of $165.5 million (£118 million). In the previous year Atari turned in a loss of $29.2 million (£20.8 million) on sales of $78.6 million (£54.7 million).

French piracy claim by Pride

AMSTRAD software supplier Pride Utilities is currently engaged in legal action with French software distributor ESAT over the alleged piracy of Pride's range of Amstrad utilities

According to Frank Severini of Pride France is a particularly lucrative market for utilities, and Pride gained large orders from ESAT for its software

But during the past few months orders dropped off, and payments slowed up until they owed us £10 000 '

Pride sent an agent to ESAT's shop in Bordeaux to investigate and he says Severini, discovered numerous people busily duplicating Pride's software Pride has since obtained £9 000 in settlement of the money owed and is taking criminal action against ESAT for piracy

Severini says that French distribution is now being handled by Polisoft

Star quality now out on the CPC 464

SEVEN Stars has released an implementation of its Qualitas printer driver for the Amstrad 464 Qualitas combines with standard word processors including *Protext* and *Tasword* to produce NLQ style printing on standard dot matrix printers It can also be used on its own for printing out listings and disc files

The program features micro justification and proportional character width, and can use five different fonts and a number of print modes including double height double width, subscript, superscript emphasised and underlined

Qualitas 464 costs £9 95 for tape and £12 95 for disc versions A version for *Tasword 6128* is to be produced in January

Details from Seven Stars Publishing 34 Squirrel Rise Harlow Bucks SL7 9PN (06284 3445)

Code on the road

CODE Masters the budget label formed recently by the Darling family has issued a further wave of 12 games The releases include Spectrum and Atari versions of *BMX Simulator*, *Terra Cognita* for the 64 *Professional Snooker Simulator* for Spectrum and Amstrad *White Heat* for the Spectrum *Super Robin Hood* for the Amstrad and *Vampire* for Amstrad

Ariola games delayed

ARIOLASOFT has delayed the release of the 64 tape version of *Marble Madness* and 64 Spectrum and Amstrad versions of *They Stole a Million* until January because of production problems

According to Ariolasoft marketing manager Frank Brunger the conversion of *Marble Madness* has run into problems while the discovery of a bug delayed *They Stole a Million*

The latter has now been fixed and the game has gone into production, while the *Marble Madness* programmers have been flown out to Electronic Arts in San Francisco to help solve the problem

Watford plugs Master

WATFORD Electronics has produced a £50 adaptor that allows the BBC B and B+ to be connected to the Acorn Master's 512K PC compatible add on board

The Co Pro Adaptor's launch comes shortly after Acorn's reduction of the price of the add-on board from £399 to £199 so allows BBC owners to run MSDOS software for a relatively small investment

The adaptor also allows the earlier BBC machines to be linked to the Master Turbo co-processor

Details from Watford Electronics, 250 High Street Watford WD1 2AN (0923 37774/40588)

An IBM at last?

Footnotes

AS our illustration shows Thingi is even more remarkable than its manufacturers have suggested Not only does this bulldog clip on a stick allow you to read and type at the same time – it also makes it possible for your PCW to accept pokes for CPC games

Continuing the stranger than fiction theme we feel we should report A Strange Event *Popular* (just the name of the Magazine) managing editor Peter Worlock is not given to fantasising (not about *Locoscript* anyway) so when he claims he hit a few control keys accidentally and *Locoscript* spewed out the words panelled bath', people take notice

In ten years as a journalist I can honestly say I've never even used the words claims Worlock Clearly *Locoscript* has depths yet to be plumbed

The latest issue of *Which* the paper that supports our buys on the other hand includes some fairly staggering feats of imagination The Tatung Einstein may not be the world's favourite machine but *Which*'s verdict that its sound software is only on a par with the (beep beep) PCW will probably generate apoplexy and righteous indignation at Tatung HQ

These foolish Thingis

Similarly the ST's sound is apparently only as good as the PC4's while the display of everything not produced by Amstrad is poor If you will run it on a TV

The old ones are the best ones and the confusion of micro and minicomputer is one of the oldest Traveller International Products has launched a transformer for portable electronic equipment such as minicomputers which are becoming essential travelling companions Many's the time we've been stopped at Heathrow and asked where our Dec 10 is

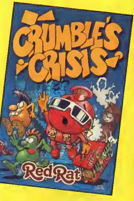
Last but not least Micronet's Children In Need on-line auction raised £45 000 with the aid of pin up girl Linda Lusardi Linda reveals a lascivious Peter Probert of Micronet donated her dress to the auction going home frockless! As a pundit commented I didn't know she normally used one



Leisure Genius

THERE'S A RAT IN ATARI...





...AND WITH TWO GREAT NEW GAMES FOR 1987!

ROBOT KNIGHTS

Mad genius Evil Otto, escapes from Futureworld into the past Your Robot Knights follow him and must find his laboratory and destroy the monster he has constructed before time runs out. You'll have to fight off the guardian zombies who will attack you with fireballs as you progress through all the dungeons and chambers of the Castle Klang For one or two gamers with simultaneous two player action with or against each other!

Disk 9.95 Tape £7.95

CRUMBLE'S CRISIS

Dozens of alien Fuzzie's have escaped from the inter-galactic zoo. You have to search all five levels of the multiverse to find and snare the Fuzzies in your containment traps There are many perils and dangers ahead ..
Brilliant graphics and sound.

Disk £9.95 Tape £7.95

Red Rat

IN YOUR FAVOURITE SOFTWARE SHOP
FROM JANUARY 10TH
or direct from

RED RAT SOFTWARE, (Dept. PCW) 11-15 Fennel St. Manchester M4 3OU

25th December 1986
Outer Data Systems

From Percival Stereo sales director
To Solomon Gommorah publishing director
Subject The Future

Season's bleatings

AS I sit here in these festive surroundings watching the snowflakes drift by the window and poking the roaring fire my thoughts automatically turn to you These thoughts unfortunately are neither of a seasonal or charitable nature

You hotshot appear to have taken the MD's request for a little Christmas turkey for the staff just a bit too literally I frankly share the judge's incredulity over your assertion that the choice of the name Top Hun was just a strange coincidence and while I concede that the damage done to relations with our German distributor can be easily repaired (after all what does plastic surgery a change of trading name and setting up half a dozen dummy holding companies coat?) it seems to me that little short of a miracle will keep us all off the streets No bad thing in your case – we need imbeciles like you out there buying the ill considered tat publishing directors like you are trying to sell

On the off-chance that Outer or whatever the new name is going to be (and you can forget Actibird right now) is to survive through the next year I think it important that I lay down a few predictions in order to help you help us make some money, just for a change

The home computer industry is as you'd be aware if you could outplay a yucca at noughts and crosses going through one of its major sea-changes

Amstrad has been dominant for a year now arguably two so it can be assumed that the company will make even more ludicrously large profits through 87

But have a care – Amstrad's range of machines is no longer a logical progression from home (464) through serious home (6126) to small business (PCW)

The addition of the PC will allow the company to benefit from PC software development in the States and to expand overseas but this will inevitably damage PCW sales

You're probably regretting your decision to move from PCW software into PC software now, but when there are actually large quantities of PCs with end users your initial ill-considered rush into MSDDS should start to pay dividends

At the other end of the scale Amstrad has a problem with the Spectrum Plus 2 The Spectrum standard has served us well but the superior graphics and sound on the ST, Commodore 64 and various games consoles make it clear that the Spectrum will need much more than cosmetic improvement if it's to sell next Christmas

The 464 and 6128 are in decline partially thanks to the Plus 2 so Amstrad will either have to dust off the old Sinclair Research Loki plans or jump over to the 68000 chip, and if it does the latter will find itself chasing Atari rather than Sinclair

Atari itself is the 23 carat winner for 87 If your 4-bit data bus can't handle anything else from this memo, remember this

```
10 LAUNCH ST STUFF
20 GOTO 10
```

The software houses who take advantage of the ST's sound and graphics next year will make seriously huge amounts of money aided by Atari's new-found determination to drive the opposition into the ground

As you're easily led I'd advise you to treat games consoles with care Practically everybody thinks consoles are going to make it big next year, but this may be based more on the proportionately larger profits they can all make out of cartridges than on hard evidence

So sensible software houses (plus Widgit, I hope) will start development work but won't overcommit their resources

As a vehicle for software the Commodore 64 has a fighting chance of being with us next Christmas and provided Commodore can restrain itself from relaunching it as a £400 D64 should provide a continuing outlet for quality games software

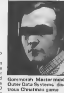
The Amiga is a less certain bet as actually making a crust out of it depends on Commodore getting the new low-cost machine into the country soon If however you've taken my comments on the ST to heart you'll find it economic to convert titles to the Amiga

The BBC machines are at the moment best left to specialist outfits Derision about Acorn's current pricing policy aside the company has done well to pull itself out of the slump that was terminal for Sinclair Research Acorn is no longer a mass-market micro producer but it now has a relatively stable base and its links with Olivetti could pay dividends in terms of R&D Apple's reported interest in its Risc technology could also prove to be a shot in the arm

Apple's own 1IGS may be worth a look as well It is as a talented pundit recently pointed out to me a £1 000 Amiga It won't have escaped you that the £1,000 price tag is what's generally held to be wrong with the Amiga but the 1IGS combines audio and graphic sophistication with Mac like ease of use

Last but not least, we should be aware of the possibility of a comeback from Sir Clive himself His Pandora portable is due for launch next month, and having swallowed the QL hook line and Sinclair the flower of the micro press is liable to approach the bearded one with the same sort of sensitivity as Henry Kissinger used vis a vis Cambodia Clive can't afford to launch any more concepts, and as he's reportedly abandoned the mirrors and magnifying glass screen the Pandora could actually be worth buying

With this in mind it might be worth checking to see that our rights to serious Z80 based programs are in order although I hardly need remind anyone bar your flea-brained self that we can't write the software until we've seen the operating system Considering your recent experience with the Bow Street constabulary I am confident you'll try not to get carried away



Gommorah Master minded Outer Data Systems disastrous Christmas game

CPC 464 Threatened by Spectrum


SUZUKI
48/128K SPECTRUM
TT RACER
BY R.J. SWIFT
TT Racer is a spectacular motor cycle racing simulation that puts you on the hot seat of a Grand Prix bike. Experience the unique thrill of racing with its stunning over-the-handlebars 3D view and state of the art solid graphics. Set-up your bike and practice hard on the 12 famous tracks, until you're ready for the challenge. To race against the other cool professional riders for the winning flag and the world championship.
Even the top Suzuki riders like Paul Lewis and Kevin Schwantz have been amazed at the accuracy of the tracks and the authentic feel of the bike.
Spectacular over-the-handlebars 3D display
All 12 Grand Prix tracks
All 4 solo Grand Prix classes
Challenge the computer and race against 15 other bikes or with networking 7 of your friends
4 different levels of competition
Full Grand Prix season points scoring
"SIMULATION OF THE YEAR" YOUR COMPUTER 1986
TT RACER NOW AVAILABLE ON AMSTRAD CPC 464, 664, 6128 CASSETTE & DISK
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SPECTRUM
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Tomahawk 48/128K £9.95
Fighter Pilot 48K £7.95
Night Gunner 48K £6.95
COMMODORE 64
Fighter Pilot £9.95
Fighter Pilot Disk £14.95
Tomahawk £9.95
Tomahawk Disk £14.95
ATARI
Fighter Pilot £9.95
Fighter Pilot Disk £12.95
Tomahawk £9.95
Tomahawk Disk £14.95
AMSTRAD CPC 464, 664, 6128
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TT Racer Disk £14.95
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Trade and Export enquiries welcome. Lifetime Guarantee

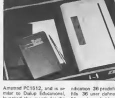
Kodak carries off smallest printer prize

ONE of the smallest full-function printers ever was launched last week The Diconix 150 developed by a subsidiary of Kodak is battery powered, weighs under four pounds and measures 2 x 6 5 x 10 8 inches

The 150 uses an ink jet cartridge to print on full width paper in draft or NLQ reaching speeds of 150 cps in draft It has optional serial or parallel interface and has full IBM Proprinter and Epson emulation plus a range of print styles

The printer is intended to be used in conjunction with portable computers but print quality although not as high as produced by more expensive ink jet printers like the Epson SQ2000 is good enough for it to double as a desktop printer It will retail at £399

Details from Norbain Electronics Norbain House Boulton Road Reading Berkshire RG2 0LT (0734 868855)



New package for comms

PMS Communications is to launch is Dialup Personal communications package in January The package will be available on a range of micros including the Amstrad PC1512, and is similar to Dialup Educational, launched this month for the schools market

The new package supports a range of different services and costs £89 95 separately or £259 95 bundled with the WS4000 modem

Details from PMS Communications Norfolk House Smallbrook Queensway Birmingham B5 4LJ (021-643 7688)

The art of graphics on the ST

MAGISTER is a new software company specialising in 16 bit software Its first product is *ArtScribe* and art and design program for the Atari ST The program can work in high medium or low resolution and shapes handled include lines rays polygons, circles ellipses frames and boxes

It has seven levels of magnification 36 predefined mono fills 36 user defined colour fills and can hold up to five pictures in memory at once The package has a host of other features can load in *Neo* and *Degas* files and costs £24 95

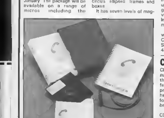
Details from Magister Software 100 Baker Street London W1M 1LA (01-486 6838)

Amstrad gains organiser suite

PLANIT is a personal organiser suite of programs for the Amstrad PCW and CPC machines and consists of accounts diary and card index programs The accounts section can hold details of up to 24 individual accounts and up to nine separate credit card levels

The diary holds up to 15 entries per day and can add up expenses in separate categories The card index provides an address book/phone list facility and also allows mailing lists to be printed out

Details from Database Software, Europa House, 68 Chester Road Hazel Grove Stockport SK7 5NY (061 429 0008)



Chess expander

CDS has now launched *Colossus 4 Chess* for the BBC and the Electron The program features a back-track facility problem solving mode and handicapping and is suitable for a range of skills from beginner to expert

Details from CDS Software CDS House, Beckett Road Doncaster DN2 4AD (0302 21134)

DIARY DATES

JANUARY

9–11 January
6th Official Amstrad Computer Show
Novotel Hammersmith London W6
Details The year kicks off with the first of an ever increasing wave of Amstrad shows Hardware software the works for CPCs and PCWs with early support for the PC to be expected
Price £3 adult £2 children £1 discount for advance booking
Organiser Database Exhibitions 061-456 8835

FEBRUARY

17–20 February
Which Computer? Show
NEC Birmingham
Details Mainly business exhibitors includes Commodore and low cost PC clones
Price £5
Organiser Cahners Exhibitions 01 891 5061

26–28 February
The Atari Computer Show
Novotel London W6
Details First chance for Atari to show off the exciting new strategy it s allegedly working on
Price £3 adult £2 children £1 discount for advance booking
Organiser Database Exhibitions 061-456 8835

APRIL

10–12 April
The Commodore Computer Show
Novotel London W6
Details Software hardware and peripherals for Commodore range of machines
Price £3 adult £2 children £1 discount for advance booking
Organiser Database Exhibitions 061-456 8835

Prices dates and venues of shows can vary and you are therefore strongly advised to check with the show organiser before attending *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser

Letters

What's in a name

I am currently well into the development of *The Magician's Ball* an adventure game for the BBC and C64 micros

However I have recently heard that there is already a game available using the same title by Global Software

Could you tell me if copyright extends to a game title? Will I have to rename it if Global so desires? Or may I ignore the fact that someone else thought of it first? After all how many *Colossal Caves* are there?

The Ogre
Tamworth
Staffs

You should certainly change your title

Better Basics here already

First, a couple of people have written to me with problems experienced while entering my Card Index program for the Amstrad PCW

The listing was in fact correct but there seems to be some confusion between lower case letter l and the number 1

Second in reply to Steven Gray's Ziggurat *(Vol 5 No 49)* almost all the improvements that he suggests could be made to Basic actually exist now

For instance he says Basic could make calls to procedures on hard floppy or RAM discs I know that quite a few BBC programs have been using this technique for a long time

I do not envisage a computer coming out in the near future with a Basic compiler as standard Basic is not an easy language to compile using as it does floating point math Also functions such as Sinclair's *Val* and BBC's *Eval* need to be interpreted at run time

Finally Mr Gray states that the Amiga uses essentially the same language as his old ZX81 This is absolute rubbish

I have used Basic on both machines fairly extensively and the Amiga's is vastly superior Amiga Basic does not need line numbers and supports a wide range of commands to aid structured programming

Iain Tatch
Chingford
London E4

Star Letter

MULE-headed attitudes

Having recently upgraded my Commodore cassette player to a 1541 disc drive I was faced with a dilemma which I am sure has been faced by many fellow users How does one take full advantage of the improved medium without having to start my program collection from scratch?

In two particular instances I decided to contact the companies which produced the software concerned to ask whether they would be prepared to send me the disc version of the program in return for the cassette plus an agreed fee Was this a reasonable request?

In the first case the program was *Datafile* and the company was a small outfit in the West Midlands called A&C Software They were only too pleased to help and charged me £5 for the service The disc was sent by return post

The second case was a program called *MULE* and the company was the mighty Ariolasoft Sorry we do not offer that service was the final outcome of my telephone pleadings

I am therefore left with a cassette based program that I am unlikely to use and a sour taste whenever I hear the name Ariolasoft

Big is beautiful? I don't think so

Paul Nash
Wilmslow
Cheshire

This is certainly a reasonable request, Paul, and we're with you all the way. Software companies undermine their own anti-piracy arguments when they refuse to treat their customers fairly — and refusing to upgrade software in return for the original and an administrative fee is unfair treatment

RAM discs revisited

I am most grateful to David Burnett of Edinburgh for answering my question about Ram discs and the need for a second disc drive *(Letters, Vol 5, No 48)*

It was also very helpful to read Howard Oakley's excellent article on Atari ST Ram discs

Furthermore I found it very interesting to read Duncan Evans' ST contribution to your software supplement as I had heard of such programs as *VIP Professional* but knew no more than their names

Reverting to published letters I am naturally interested in the verbal battle between Richard Scott and Antony Shepherd because their discussions have matched my own dilemma in being pressured towards IBM PC compatibles on grounds of software support, and my instinctive preference for micros based on the 68000 microprocessor

Incidentally why can Digital Research not produce Atari

Puzzle

Puzzle No 238

In the Christmas Crossnumber puzzle all of the clues refer to the numbers across *except* for 1 which is the eight digit number *down* You may only use the digits 1 to 9, zero is not used

1 A cubed
2 A
3 A squared
4 B cubed
5 B

Solution to Puzzle No 233

Answer The next number in Jamie's series is 1575

Solution The series is composed of numbers which are equal to half of the sum of their digits multiplied by the products of the digits

Starting with 1 the program checks each ascending digit in sequence to determine if it possesses this property Any numbers that are found are printed out

```
10 Y=1
20 Y$=STR$(Y)
30 S=0:P=1
40 FOR N=1 TO LEN(Y$)
50 Z=VAL(MID$(Y$,N,1))
60 S=S+Z:P=P*Z
70 NEXT N
80 IF Y=(S*P)/2
   THEN PRINT Y
90 Y=Y+1:GOTO 20
```

Winner of Puzzle No 233

The winner this week is C S Lalkaka of Calcutta India who will be receiving £10

Rules

The closing date for Puzzle No 238 is January 12th Answers on a postcard please

ST versions of the Gem programs it is releasing – at budget prices – for the Amstrad PC1512?

I ask this because both machines are bundled with Gem and the ST is a better vehicle for Gem since the operating system is supplied in Rom rather than on disc

P Michael Kingston
Yate
Nr Bristol

Ribbon resources

Anyone among your readers who is having problems getting a re-inking ribbon for the Commodore MPS 801 printer *(Letters, Vol 5 No 49)* might like to know that we have them available at £4 95 each

We also stock ribbons for most other Commodore printers including the MPS-1000 and even the 1515/1525

Supersoft
Harrow
Middlesex

The Rockfort Files

I feel obliged to recount my recent experience of quite appalling service at the hands of one of the advertisers in your magazine

The advertiser in question is Rockfort Products and my problems began on November 3 when I ordered a Disciple interface

As I had heard nothing from them by November 11 I rang Rockfort Products and was told the Disciple was being dispatched that day

It actually arrived on November 15, unfortunately without the utilities program tape which is necessary to make the interface compatible with other hardware. Obviously, without the software the interface was useless

On November 17 I rang Rockfort again and spoke to a charming young lady who promised that one of their more knowledgeable staff would call me back

As I had not received the return call by 3 30pm I rang again and was told the tape was being sent that day

After another letter and phone call I was told that they were waiting for a software modification and an updated tape would be sent on November 20

My tape still had not arrived by November 27. Shortly thereafter I was telephoned by Alan Miles from the company who told me that I had been misinformed and that the modified software had not yet been produced. However a copy of the original tape would be sent by registered post

On December 2 the tape had still not arrived. In the circumstances I am returning my Disciple to Rockfort with a demand for an immediate refund of my money

I sincerely hope that any of your readers who are considering purchasing one of their products will take note of my experiences

Mark Kaleda
Glastonbury
Somerset

What a demanding chap you are, Mark. Delivery of a hardware product in less than two weeks is not a record, but it's a reasonable service. The mix-up over the tapes is unfortunate but under the circumstances I don't think it's a capital offence.

"He was caught pirating British software"

Overlooking the obvious

I am sick to death of waiting for a manufacturer to produce what I thought would have been obvious – a fast, simple, economical 68000-based home micro

According to the statistics from your reader survey I'm a very typical reader so I know there are thousands of others waiting too

All that is required to achieve massive sales is a machine with good hi-res graphics, a brisk clock rate and a fast, modern, flexible Basic

The machine should have a completely standard set of ports in order to accommodate everyone's existing peripherals – RS232 and parallel printer interfaces, a standard disc interface, RGB composite and TV video outputs, and – obviously – a couple of joystick ports

I know that a vast number of people have stuck with their old 8-bit faithfuls because they havent been offered a straightforward 16-bit alternative at a reasonable price

And most people don't want the nonsense of expanded 8-bit machines with paged memories. A full 68000, a simple architecture, and a nice chunk of continuous memory are all that's needed by most buffs

Talk about a missed opportunity! I think marketing men are blind. There's still time – a fortune awaits the first

Peter Erskine
Colchester
Essex

It depends on your definition of "economical" but we would suggest that the Atari STs fit the bill perfectly. If you want an ST at the price of an old 48K Spectrum, we would suggest you don't hold your breath.

Gallipoli review reviewed

Your reviewer's initial comments on our wargame *Gallipoli* were fair, accurate and pleasing. But, half way through, a piece of shrapnel seems to have struck his Spectrum. The only crashes in this program are those emitted by the loudspeaker when the battle is at its height!

During days and days of play testing, both by ourselves and by the competent team of testers employed by CCS (who really did all they could to tear the finished program to shreds – and failed), this program has not crashed. Neither have any of the many customers who have purchased the program since its launch complained of a crash. Yet most unfortunately, this single report of alleged crashing dominated the review

Your reviewer was victim of a mishap of which we may never know the cause (static? dirty tape-head?) but it would seem commonsense that he would at least have asked for another review copy of the program and given it a full trial before rushing for his pen

Speaking of rushing, the reviewer implied that it is essential for a computer wargame to run at blitzkrieg speed. He reveals that he has little realisation of what an enormous amount of computing goes on behind the scenes when a realistic emulation is running. Between turns the wargamer prefers to take time in which to consider the next move against the computer, or argue about tactics with an opponent or co-commander (yes, this is also a game for two or three players – the review omitted this important point). We have used fast machine code routines whenever it is important

On the other hand, if you really *must* have a faster game, run the 48K version (also omitted from the review) which is compiled and runs so fast that we had to slow it down in many places. Actually we compiled it not for speed but to save memory since the game is too long to fit into the 48K. So 48K owners have more than usual value for money, while 128K owners have extra options exploiting the additional facilities of their machines

We feel that a large part of the review was weighted and unfair, to put it mildly, and did not provide the overall objective coverage that readers of your journal are entitled to expect

Audrey and Owen Bishop
CCS

Paul Svycarsky replies: In an ideal world I may have requested a replacement for our copy of Gallipoli which crashed not once but several times. Unluckily, publishing deadlines made this impossible and I was unwilling to put too much faith in a program that is written in unprotected Basic anyhow

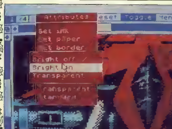
My feeling remains that the program is slow and not up to the standards we have come to expect from CCS. Sorry!

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Starglider – Program of the Year

And the winners are...

Many thanks to the hundreds of people who entered this year's Readers' Poll and collectively turned up a set of worthy winners

Counting up all the votes was particularly exciting this year since there were some very close tussles among the winners with just one or two votes separating the winners from the runners up. Perhaps a reflection of the high quality of products released this year?

Program of the Year

(Holder Elite – Firebird)

The voting for this, the top award in the poll was an exceptionally close fight between five titles *Leaderboard* (US Gold) *Mercenary* (Novagen) *Starglider* (Rainbird) *Trivial Pursuit* (Domark) and *Uridium* (Hewson) each one of which led the field at some stage during the count. Not until we'd recorded the forms which only arrived in the nick of time did they settle into the final order, and *Starglider* triumphed over *Trivial Pursuit* by just two votes

Winner: *Starglider* (Rainbird Software)

Runners up **2 *Trivial Pursuit* (Domark)**
3 *Leaderboard* (US Gold)
4 *Mercenary* (Novagen)
5 *Uridium* (Hewson)

Arcade Game of the Year

(Holder Elite – Firebird)

This category was nowhere near as closely fought as the previous one. *Uridium* took a strong lead from the earliest forms we received. A clear winner

Winner: *Uridium* (Hewson)

Runners up **2 *Starglider* (Rainbird)**
3 *Thrust* (Firebird)
4 *Lightforce* (FTL)
5 *Ghosts and Goblins* (Elite Systems)

Simulation of the Year

(New category)

Plenty of flight simulators, racing games and sporting titles fought it out here, with a very close battle between the two most popular games *Tomahawk* and *Leaderboard*. *Leaderboard* made it by a whisker. Interestingly no martial arts game figured strongly in the voting

Winner: *Leaderboard* (US Gold)

Runners up **2 *Tomahawk* (Digital Integration)**
3 *TT Racer* (Digital Integration)
4 *Starglider* (Rainbird)
5 *Silent Service* (Microprose/US Gold)

Adventure of the Year

(Holder Lord of the Rings – Melbourne House)

In the end we nearly gave up counting the votes for *The Pawn* and considered weighing them instead. The four runners up did however, manage a credible showing

Winner: *The Pawn* (Magnetic Scrolls/Rainbird)

continued on page 16 ▶



GAC – Utility of the Year



Uridium – Arcade Game of the Year

◀ continued from page 15



Commodore Amiga — Most Exciting New Computer

Runners up **2 The Price of Magik (Level 9)**
3 Heavy on the Magick (Gargoyle Games)
4 The Boggit (Delta 4/CRL)
5 Leather Goddesses of Phobos (Infocom)
Jewels of Darkness (Rainbird/Level 9)

ished far, far ahead of its nearest rivals. GAC notched up four times as many votes as the second placed title.

Winner: Graphic Adventure Creator (Incentive)

Runners up **2 Artist II (The Edge)**
3 Laser Genius (Ocean IQ)

Business Program of the Year

(Holder Mini Office – Database Publications)
Another job for the weighing scales here, as Database galloped for home the second year running.

Winner: Mini Office II (Database Publications)

Runners up **2 Tasword Three* (Tasman)**
3 Fleet Street Editor (Mirrorsoft)

*All versions of *Tasword* released this year counted as one program

Peripheral of the Year

(Holder AMX mouse)
Music add-ons featured strongly in the voting this year along with the usual joysticks, modems and mice. Top of the pile was Specdrum/Amdrum, which we counted as one product.

Winner: Specdrum/Amdrum (Cheetah Marketing)

Runners up **2 Multiface One (Romantic Robot)**
3 Konix Speed King joystick (Konix)

Utility Program of the Year

(Holder The Art Studio – OCP)
Another category where the winner fin-

Best Software House

(Holder Melbourne House)
Back to competitive voting and demands for a recount in this category, with just nine votes separating the top five companies. Elite Systems just managed to hold off the opposition.

Winner: Elite Systems

Runners up **2 Mastertronic**
3 Firebird
4 Hewson
5 Rainbird

Programmer of the Year

(Holder Greg Follis and Roy Carter – Gargoyle Games)
Carter and Follis made a good attempt to retain their title but were unable to overcome the support for Uridium author Andrew Braybrook and Mastertronic specialist David Jones.

Winner: David Jones (Knight Tyme, Spellbound)

Runners up **2 Andrew Braybrook (Uridium, Alleykat)**
3 Greg Follis/Roy Carter (FTL)

Most Exciting New Computer

(Holder Amstrad CPC6128)
Amstrad's PC may have been the most talked-about launch this year but this didn't cut too much ice with the voters, vast numbers of whom reckoned the Amiga was a much more exciting computer.

Winner: Commodore Amiga

Runners up **2 Spectrum Plus 2**
3 Amstrad PC1512

Most Overrated Software House

(Holder Ultimate)
Methinks *Knight Rider* and *World Cup Carnival* had something to do with the voting here. It certainly wasn't *Leader board* or *Batman* anyway.

Winner: Ocean

Runners up **2 US Gold**
3 Ultimate

Computer Program You Most Regretted Buying in 1986

(Holder A View to a Kill – Domark)
Well *World Cup Carnival* certainly caught your imagination. A soaraway success in this category.

Winner: World Cup Carnival (US Gold)

Thanks again for entering. Now turn to page 17 to find out if you were one of the lucky joystick winners.

50 Joysticks from Santa

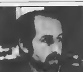


The Readers Poll wasn t just about handing out bouquets and brick bats to various companies and products but also about Konix Speed King joysticks

Fifty of them in fact, which will go to 50 poll forms selected at random from the hundreds we received

And out of the proverbial hat came Alister Lam Finaghy Belfast NI Alan Lifeson Moston Manchester Mr M Hopkins, Willenhall West Midlands J A Riddell Herne Bay Kent Aidy Thompson, Withernsea East Yorks Sean O'Kann Derry, NI Mr N Haden, Fishguard, Dyfed C Yau London NW1 Chris Gunning, Belfast Wayne Styles, Salford Manchester Andrew Lane Twyford Reading Mr A S Wauld Woodchurch Wirral N Card Stoke-on-Trent David Allen Welling Kent John Hughes Kidderminster Worcs Mark Gould Edgware Middlesex Sean L Estrange Co Westmeath Ireland Mr M C Mitchel High Wycombe, Bucks, L D Wood, London SE19 David Mogey Belfast NI S Summerscales Staincliffe, Batley Frank Beilby Doncaster S Yorks Alastair Craig Reading Berks David Cummings Edinburgh Peter C Glen, Moodiesburn Glasgow Carol Cooper, North Anston Sheffield David Bedford Paddock Wood Lightwater Ian Wilding, Skelmersdale Lancashire Adrian Lake Rainton Gate, Tyne and Wear Simon Wicker Borehamwood Herts B Walker Edgbaston Birmingham Andrew Skiba Dewsbury West Yorkshire David Lloyd Tarporley Cheshire David Hoolachan Salford Manchester Mr R Lewis Normanton, Derby Kevin Morrell Doncaster S Yorks R G Messenger Abernethy Perth Edwin Armstrong Bedford Mr D R Halliwell Birkenhead Merseyside M Pope London E5 Mohammed Akber Butt London W12 A Alexander, Boston Lincs Graham Steadman Woking Surrey David Oya Banbury Oxon Neil Cobbett Charley Lancs Jason Watson Cleethorpes South Humberside David Jackman Kirkcaldy, Fife Martin Shortland Chatham Kent David Haffner Redditch Worcs J E Boulderstone-Salthouse Stockport Chesire and Mark Griffiths, Huyton Merseyside

All joysticks will be on their way soon



What's the colour of magic?

Tony Bridge looks at The Colour of Magic, the latest adventure from Fergus McNeill and the book on which it is based

The merits of Delta 4's *Colour of Magic* released under the auspices of Macmillan the book publisher, has been much-trumpeted in the popular computer press lately. Of course any new program by Fergus McNeill is worthy of such attention – he of all adventure-writers, is almost alone in being able to use *The Quill* to its full

> *"In order to appreciate the new Colour of Magic, we must look at the source of the inspiration . . ."*

When the utility was first released I voiced the hope that it would free the imagination of hitherto computer-bound authors who could then give free reign to their ideas. A depressing few thousand adventures later, I have to admit that there is a mere handful of programs that fulfil this promise several of these are Delta 4's.

THE COLOUR OF MAGIC

Jerome K. Jerome meets LORD OF THE RINGS (with a touch of Peter Pan)

TERRY PRATCHETT

Just about all of McNeill's adventures are parodies of one sort or another of both existing programs (*The Boggit* of course *Lord of the Rings* and *Joystick* which parodied several programs including arcade games of the time) – with the latest program he has turned to a book which seems to be a parody itself.

So in order to appreciate the new program we must look at the source of the inspiration.

Terry Pratchett's 1983 novel *The Colour of Magic* is set on Discworld – a pretty ordinery world, really, but for one or two minor details. First of all the world gets its name from the fact that it is just that a disc – and what's more, it is supported (get this) on four elephants carried on the back of a giant turtle swimming through space. It is moving towards The Destination, although the finest brains of the Discworld can only speculate on what this may be. however, the thought that one day the great turtle might meet another of the opposite sex gives a certain spice to their idea of the Big Bang Theory. . . . Well the inhabitants of this world don't feel any different for all this and would probably laugh at the plight of us poor fools clinging on tight to a spinning ball suspended with no visible support.

> *"Terry Pratchett's novel, The Colour of Magic is set on Discworld"*

The other difference between the Disc and other worlds is the force of magic which is a tangible force of a definite colour the eighth colour Octarine.

Reading *The Colour of Magic* I was reminded most strongly of *Hitchhiker's Guide to the Galaxy* and this may well be the object of Pratchett's intended parody – Rincewind the failed magician (he only has one spell buried deep in his subconscious) is a parallel of Arthur Dent in his bemused submission to fate while Twoflower the innocent tourist leaves a trail of destruction behind him like Ford Prefect.

Many of the jokes and one-liners ("On the Disc the Gods dealt severely with atheists") are very *Hitchhiker* like one in particular about a stray thought winging its way from another dimension ("another fine mess you've got me into") owes a great deal to Adams' masterpiece.

There are several running jokes throughout the book and one of them makes much use of Twoflower's native language. Rincewind views unfamiliar words with his limited perception and thus struggles with the notion of a "financial" magic called Echo Gnomics – Twoflower also mentions Ghlen-Livet, the fermented knock out drink.

The most important running joke concerns the bungled efforts of Death to catch up with Rincewind (at the most crucial moment, he actually sends an even more stupid Deputy Death).

Much of this is inspired writing, but it is frustratingly interspersed among laboured schoolboy humour. This is, perhaps what drew McNeill to the story in the first place – much of McNeill's own work has this air of third form giggles (the home of the Gods of Discworld is would you believe Dunmanifestin a McNeill rib nudger if ever I heard one) occasionally yielding gems of brilliant wit.

Neither author can sustain the humour over long periods however and the writings of both though brilliantly decorated are ultimately empty vessels.

If there's one sort of plot that really makes me annoyed it's the Deus ex Machina where the hero or heroine is placed in a seemingly hopeless situation only to be rescued by some totally improbable device.

In the present book, two examples will suffice there are certain characters who are hydrophobes (they abhor water) – the author introduces them at an early stage of the book but their only reason for existence seems to be to enable Twoflower to escape from their clutches by spitting at them!

Again Rincewind (for no good reason) picks up a frog in his travels whose use only becomes apparent later in the book when lo and behold, it turns into a goddess *just in the nick of time* to rescue the two unfortunates (in this case a *Deus ex Grenouille* I don t know the Latin for Frog)

But this isn t a book review column – what of the adventure? Well you can be sure that McNeill isn t going to release something sub standard particularly for Macmillan and *Colour of Magic* in sheer game terms is well up to the usual standard Fergus and Delta 4 are probably the most skilled *Quill* users around at the moment and all the features we ve come to know and love are here

Long ago Delta 4 realised that the only way to create a decent tape-based adventure with *The Quill* was to use multiparts and as usual these work well Freed from the constraint of squeezing his text into the small available memory McNeill treats us to the usual screen-upon-screen of Delta 4 scene-setting – something like seven or eight complete screens in the first location all written with his own character set

There are also the well-drawn graphics at each location along with Ram save sound effects and so on, as well as characters that you can talk to and otherwise interact with (though I m not sure how useful this can be)

Moving is a little weird though you ll quickly get used to it as you re moving around a disc you can t go east west and so on – rather, you travel Hubwards (towards the middle of the disc) and Rimwards (towards the outside of the disc) or Turnwise (clockwise) and Widdershins (an olde English word for anti-clockwise) As in most of the other Delta 4 stories there are many locations to be explored before you really get stuck, in the first section of the story it is your task to get clear of the city of Ankh-Morpork You don t know this at the start but pretty soon the city is going to be destroyed by fire and I have the feeling that you haven t even got a fiddle

I m writing this review just days after receiving a pre-production copy of the adventure, so I haven t seen the second part yet (and I can t wait to the third part when I ll be interested to see how the magical colour Octarine is translated to the small screen!) but it seems to me that the aspect of the book that I discussed earlier that of the Deus ex Machine is tailor made for computer adventures though I have my doubts about the way that this will translate into logic puzzles some very strange solutions seem to be called for I d recommend taking the Frog when you find it!

Adventure Helpline

Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair – help is at hand

Fill in the coupon explaining your problem, send it to us, and a fellow adventurer may be able to help

Remember – the system only works if those adventurers who have solved the puzzles get in touch Every week is Save An Adventurer Today (SAAT) week!

Adventure .... on (micro) ....
Problem ....
....
Name ....
Address ....
....

Get writing – get Popular

Popular Computing Weekly always welcomes contributions from its readers for articles, features and program listings.

Whether you want to write articles see your programming masterpieces in print, pass on some words of wisom, or simply let off steam, there s space in the magazine for you

Ideas for **feature articles** or completed articles should be sent to Christina Erskine All aspects of home computing are considered but we cannot feasibly accept anything longer than 2 000 words so brief is best It s worth checking by phone or letter first that your article will be suitable Payment is normally £35 per published page

Technical editor Duncan Evans looks after the **program listings** and articles on programming We rely on you for our Programming section so earn yourself a place in the *Popular* Hall of Fame (and £25 for each page we print) by having your program published Even if it s not 100s of K of pure machine code but a short snappy routine there may well be a place for it in **Bytes and Pieces** (£10 a shot)

Articles on any aspect of programming are also welcome – with short listings included if relevant

Got something you feel needs saying loud and clear? Your opinions on any aspect of the computer industry are welcomed so why not write in to the **Ziggurat** section? No more than 600 words please If published we ll pay you £15

So maybe it s not the money you re after but you d just like to have some say in the magazine

For shorter comments general observations or queries there is of course the **Letters page** with the tempting offer of a year s supply of *Popular* binders for the Star Letter each week

Left the adventurous Tony Bridge
Right the active Tony Kendle

For more specific points our team of columnists are always willing to answer questions and keen to hear the latest information Drop your lines to **Tony Bridge** (adventure hints always gratefully received) **Tony Kendle** (who wants as many Arcade pokes maps solutions etc as possible) **David Wellin** (communications) **Kenn Garroch** (programming problems) **Mark Jenkins** (music queries and sample tapes) and **Martin Bryant** (computer chess comments)

All letters should be addressed to *Popular Computing Weekly* 12–13 Little Newport Street London WC2H 7PP If you mark your letters with the department you want things get processed much more quickly

Christmas is for players



Tony Kendle brings you a veritable sackful of pokes, playing tips and maps

One of the things I try to do occasionally in the column is attempt to explain to people how pokes and cheat routines work and how to find your own This is something which I must confess, we have been neglecting lately, because there has been so much other stuff to write about However I have had my conscience pricked by a letter from A I Ferguson of Carlisle

In brief the system you use to work out an infinite lives poke is to look for a certain sequence of machine code instructions responsible for causing you to lose a life There are only a few instructions that programmers use to do this For example let s say that the number of lives are held in memory location 20000

On a Z80 machine the sequence of machine code instructions to cause these lives to be reduced will probably be

LD A (20000) – Put the contents of memory location 20000 in the A register
DEC A – Reduce the number held in the A register by one
LD (20000) A – Put the contents of the A register in memory location A

You can thus write a small Basic program which will go through the machine code of your program looking for the numbers that stand for these instructions (minus the specific memory location) in any new game that you buy

Once you have found this routine all you need to is replace the *Dec A* with some command that does nothing – and hey presto, you never lose a life Any cheat routine you see that includes *Poke xxxxx, 0* will be likely to be doing exactly this – replacing the *Dec A* with no instruction

The alternative would of course be to replace the number of lives (in our example held in memory location 20000) with the highest number possible which is usually 255 Any cheat routine that includes *Poke xxxxx 255* will be doing this

I promise that in the beginning of the New Year I will take a long and detailed look at this process so that absolute beginners can find new pokes In the meantime BBC hackers who want to experiment with looking for pokes should read this letter from Mr Ferguson The BBC machine has some peculiar quirks about how the memory is organised in pages and accessed by the users, so owners of other machines needn t take too much notice of the following

I have read with interest your tips on hacking games On the BBC I have found that in most cases the lives are stored in a zero page location I take a game note the number of lives break the game and search the zero page for a number which is the same or one less than the number of lives Of course a dissassembler comes in handy

I then use a simple Basic program that searches the code for a load or store command that refers to this memory location The BBC machine code number for *Load* is *&A9 Hex* and for *Store &85* The Basic program would be

```
FOR A=(program load address) to (load address + program length) IF ?A=&AS AND A?1=(lives location) THEN PRINT A NEXT ELSE NEXT
```

I enclose a short listing which gives infinite lives on the Micropower game *Killer Gorilla* for the BBC B It is not exactly hot from the press but it does remain an oldie but goodie

Actually we are saving Mr Ferguson s pokes for the game which is one of my favourites until next week s issue together with some marvellous routines for other games

In the meantime I hope many more readers will be able to contribute useful tips for new hackers I would also like to hear from readers who wish to enter pokes on which aspects they find hard to understand

The biggest problem is often of course getting pokes into protected games but that is another thing altogether and something we can t always help on

Now for something less highbrow No doubt all Spectrum owners are well aware of the recent releases by Hewson Steve Crow s new game *Firelord* Steve is of course the programmer who has been responsible for writing better Ultimate style games than Ultimate itself has done

Firelord continues his fine tradition in that game is superbly playable and the

continued on page 22 ▶

Charts

Top Twenty

1	(3)	Computer Hits Vol 3	Beau Jolly
2	(2)	Trivial Pursuit	Domark
3	(1)	Paperboy	Elite
4	(12)	Ollie and Lisa	Firebird
5	(5)	Scooby Doo	Elite
6	(7)	180	Mastertronic
7	(10)	Five Star Games	Beau Jolly
8	(–)	Gauntlet	US Gold
9	(16)	The Great Escape	Ocean
10	(11)	Cobra	Ocean
11	(–)	Happiest Days	Firebird
12	(4)	Konami s Coin-op Hits	Imagine
13	(14)	Ninja Master	Firebird
14	(17)	Repton 3	Superior
15	(8)	They Sold a Million (3)	Hit Squad
16	(9)	Infiltrator	Mindscape/US Gold
17	(–)	Thrust	Firebird/Superior
18	(–)	American Football	Bug Byte
19	(–)	Alien	Bug Byte
20	(–)	Bomb Scare	Firebird

All figures compiled by Gallup/Microscope

◀ continued from page 21

sprite characters are as cute and attractive as anything ever seen on a Spectrum

With its customary aplomb, Hewson has sent us a Christmas present of a fine collection of playing tips for *Firelord*

At the start of the game you should keep going up the screen and moving to the right until you find an enchanted crystal This crystal will give you firing power

Once you are in possession of an enchanted crystal you should enter a house and try to steal something (is this game entirely moral?) You can use these objects to barter with the other tradesfolk Steve Crow recommends that you steal a couple of broomsticks from the witch

Now go in search of the Wizard who will be able to give you some interesting information to help you in the game

Beware of the fireballs which you will encounter on your travels If you run into them you will lose a life (isn t that always the way?)

To pass the ice flames (which look like white fireballs) you must run at them head on and then retreat rapidly before they change into deadly fireballs

Try to avoid the green figures which look like enchanted crystals If you hit them they will steal your crystal and reduce your firing power

You can barter with the herbalist to gain a magic spell This will enable you to transport to a magic place very quickly

I m sure that those tips will be helpful I must confess though that my favourite Spectrum game of all time from Hewson must be *Uridium* – a megablast If anyone has some useful tips (other than dodge, duck shoot) or even better a set of pokes please don t waste time getting them in the post

```
1
2  *                                        *
3  *       THE HAPPY HACKERS PRESENT        *
4  *          CPC DEXTER CHEAT              *
5  *                                        *
6  ******************************************
7
8
9 DATA 21,[illegible] c3 e5,c5,21,97,c[illegible] e5
10 DATA c5,21,5e,02,0b,cf,e5,c5,21 [illegible]
11 DATA 86,0[illegible] C5 [illegible] 55 78,36,84,11,[illegible]
12 DATA 7C,C1,FD 61,F5 C8,1[illegible] 38,F8,F[illegible]
13 DATA 38 [illegible] F0,[illegible] 76 F8,21 4[illegible]
14 DATA 11 F[illegible] 01 [illegible] 00,ED 00 F3,21 55
15 DATA 70 11 [illegible] 01 [illegible] ED 00 C3,31
16 DATA 69 21,1[illegible] E2 2[illegible] 09 C3 [illegible]
17 DATA 03,21 D[illegible] 7E 35,00,C3,DA,[illegible]
18 MEMORY &7000
19 FOR X=&4000 TO &40[illegible]
20 READ a$
21 POKE X VAL [illegible]
22 NEXT
23 LOAD"
24 POKE &7924,&C9
25 MODE 0
26 CALL &4000
```

Miami Vice map

Tips (1) Don't get too close to the walls or else you will hit the wall when you try to turn (2) Don t shoot a suspect unless he tries to shoot you (3) Drive at about the same speed as the cars around you (4) W/H stands for warehouse.



A flash in the pan from Sparklers

SAS Operation Thunderflash first of CSD's new range of Super Sparklers (that's budget games that cost a quid extra) is hopelessly (and I use the term advisedly) derivative.

You play Rock Herdman leader of a crack team of SAS troopers (who must have cracked as only Rock seems to be there) searching through an embassy to rescue hostages. The 50 rooms are presented in diagonal 3D form, with attribute clash being avoided by presenting the game in glorious monochrome. The basic method of play seems to be to enter a room, line up your gun on the resident terrorist, shoot him, then on to the next room and/or rescue hostage.

This sounds easy enough, but it's difficult to control your figure either with keyboard or joystick – Rock is highly responsive so generally ends up facing the wrong way and getting shot. This might be one way to make it harder to finish a game, but it's not the right way.

Basically there's hardly anything – well actually there's nothing – to recommend this one. It's not badly programmed, but it's not gripping, it's not original. I'm not all that sure it even *qualifies* as a game and it's not worth £1.99, far less £2.99.

Popular Appeal ♦

John Lettice

Program *SAS Operation Thunderflash* **Micro** Spectrum **Price** £2.99 **Supplier** Sparklers, Unit B11, Armstrong Mall, The Summit Centre, Southwood, Farnborough, Hants GU14 0NP

Run for the skies

Remember the great scene from *Return of the Jedi*, where our heroes go whizzing through the forest on jet bikes?

Sky Runner, the latest from Cascade, is a bit like that, which gives it a touch of welcome originality since, of all the great movie scenes, this is the one that's been copied least.

The screen display is from above and behind your vehicle and the graphics and animation are super-smooth as trees, defence towers and enemy craft tear towards you at top speed.

The scenario is a bit of forgettable nonsense about intergalactic drug runners. You sign on as a mercenary to put a stop to it.

The first stage puts you in command of a small space ship with the task of knocking out the ground defence towers. These resemble telegraph poles except they fire back.

Having cleared enough of these (how many depends on the difficulty level) you deposit a *Sky Runner* to clean out the bike riding bad guys.

This is the goot bit, as you zoom in and out of trees trying to stay on the tail of the enemy long enough to fire a telling shot while keeping a second eye on your scanner for one of the cunning swine creeping up behind you.

Just to complicate matters (and it's damned difficult anyway) there are other good guys on the planet doing exactly what you're trying to do. You'll realise that having three eyes is a distinct advantage. Killing these friendlies doesn't half eat into your salary.

Once you've knocked out sufficient bikers (again, numbers depend on difficulty level) you get a crack at the drug harvester. This is a big, slow moving but heavily armed tortoise that ambles across the screen.

Get through this, and it's back for more telegraph poles, bikers, etc.

Sky Runner has a number of flaws, not least of which is the fact that there's nothing else to do. Once you've mastered the controls and become adept at dodging trees while shooting down enemy bikers, you've mastered the entire game (except for level eight which is an impossibly difficult night mission).

Other minor criticisms include the lack of a high-score table.

Sky Runner is great for the first couple of missions and rather boring thereafter. Half marks for trying, minus a few for the price.

Popular Appeal ♦ ♦

Peter Werlock

Program *Sky Runner* **Micro** Commodore 64 **Price** £9.95 cassette, £12.95 disc **Supplier** Cascade Games, Harrogate HG1 5BG

A real joystick breaker

Zub is all about reclaiming the Green Eyeball of Zub from the Planet Zub 10 with you starting on Zub 1. *Zub* is all about shooting annoying aliens that get in the way. But most of all *Zub* is about platforms. Moving platforms.

You jump on the first, move it along under the next, jump, move, jump, move and so on until you get transported. The aliens (generally well designed, including the immortal Galactic Jelly and a weird Space PacMan) are an annoyance because as well as draining your limited supply of energy (or should that be patience) they have the habit of knocking you off your platform back down to the ground. A real joystick breaker if ever I saw one.

Finishing the first level took a couple of hours and several tranquilisers – but although it was done more out of bloody-mindedness than any great enjoyment, you may be the kind of headbanger that goes for this sort of thing.

Out of the three major formats, the Spectrum was the hardest with Commodore easiest.

Popular Appeal ♦ ♦ ♦

John Cook

Program *Zub* **Micro** Spectrum, Commodore 64 and Amstrad CPC **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Terra Cresta zappa

Terra Cresta is one of those arcade extravaganzas which are so compulsive that you tend to forget how unimaginative they are. Based on what must be the follow-up to the coin-op classic *Moon Cresta*, *Terra Cresta* combines elements of *Xevious*, *Galaxians* and half a dozen other nameless zappers.

The background scrolls vertically as your space fighter jitters around the screen avoiding attacks from various airborne baddies. Auto-fire is a necessity if you want to avoid thumb-death since you also have to eliminate what look like fire-breathing triceratops which stalk menacingly towards your ship.

At regular intervals you reach a landing ground, and on zapping a heavily-defended target you get the chance to dock with another ship giving you additional fire power but making you a larger and more vulnerable target.

Cross the sea under continuous fire from radar stations and concealed missile bases and you get to the next continent and so forth ad nauseam.

Two major points annoyed me: each time you lose a life you return to the very start of the game, which is incredibly frustrating, and the music, while well up to Martin Galway's usual standard, could do with an off option. There may be one there but it isn't obvious.

That aside, *Terra Cresta* looks nice and is certainly challenging, but adds little to the host of frantic fire-button thumpers we've seen in the last few months.

Popular Appeal ♦ ♦ ♦

Chris Jenkins

Program *Terra Cresta* **Micro** CBM 64 **Price** £8.95 **Supplier** Imagine, 6 Central Street, Manchester M2 5NS

Topically tasteless touches

Topically tasteless touches mark out *Defcom*, which uncovers a hitherto unforeseen danger in Reagan's Strategic Defence Initiative – the possibility that aliens will take over the satellites!

It sounds like the plot of an ultra-corny B movie – the sort of film that's full of firepower and special effects – and that sort of sums up the game too: a wild bout of blasting and some pretty graphics.

Being a hero is never easy, something that holds as true for the year 2086 as it does for today. You have to keep an eye on where those pesky invaders are going to turn up next, using a map of the world and by monitoring communications from earth. You then zoom off to the satellite shooting as you go.



Rather like tokens that you get with petrol, your points from this stage bring you the extra weapons that you'll need to neutralise a satellite. This is achieved by a complex procedure of keeping the it on screen, shooting a bomb that the aliens drop, then potting the sputnik in one.

All well and good, but in terms of playability you might suspect that the aliens had a hand in programming *Defcom*. One of the main problems is the use of a pull-down menu, which is used to call up the map, choose weapons and other vital features. As well as losing you valuable blasting time, it also obscures the screen, which makes your heroic sharp-shooting more of a shot in the dark while you're navigating.

The other major problem is that though the alien craft zoom about the 3D space, it takes ages to bring your ship to a threatened area. In the end this is neither frantic zapping game nor fiendish strategy – it's just frustrating. The obvious solution to this alien menace is to scrap SDI immediately.

Popular Appeal ♦ ♦

John Minson

Program *Defcom* **Micro** Spectrum 48K **Price** £8.95 **Supplier** Quicksilva Ltd, Victory House, Leicester Place, London WC2H 7NB



Going Top Gun from the film

The larger software houses seem to have been particularly unlucky with their film spin-offs this autumn with the exception perhaps of *Aliens* Much of the success of this kind of licence depends on the success of the movie *Ghostbusters* for example never stood up as a game on anything else other than the Commodore 64 but rode on the back of the name alone Trouble is neither *Cobra* *Big Trouble in Little China* *Howard* (the Duck) or *Top Gun* have made much of an impression on the general public Just as well then that *Top Gun* (the game) has got merits independent of celluloid inspiration

With uncharacteristic wisdom Ocean have junked any idea of using the plot of *Top Gun* (virtually a remake of *An Officer and a Gentleman* anyway) and settled for a straightforward combat game with you piloting an F14 Tomcat – just like Tom Cruise a stand-in did in the film

One or two player – with you playing either the computer or a friend – the screen is split vertically down the middle with two independent sets of 'out of the cockpit' views and requisite instruments/radar The view you get out of it is not 70mm Sensurround – rather black and white vector style graphics with the horizon shown as a dotted line It's a straightforward dogfight and as you would expect with the relative simplicity of the screen it's pretty fast stuff

Played with joystick the controls are the usual climb/dive/bank stuff with keyboard controls to control the engine thrust, weapon selection (cannon/missile/flares)

In two player mode the Amstrad keyboard controls were badly laid out but it still produced fair enough entertainment Not a bad effort then – particularly recommended if you're after a minimalist two player air combat game

Popular Appeal ♦ ♦ ♦

John Cook

Program *Top Gun* **Micro** Amstrad CPC (Spectrum and Commodore to follow) **Price** £8 95 (tape) £14 95 (disc) **Supplier** Ocean 6 Central Street Manchester M2 5NS

A status symbol on the track

Now this most definitely brings it all back because when I was just a lad (Fade up Hovis music) the only real status symbol was a Scalextric set and the only real thrill was saving up enough money for a chicane or enough curves to create your own little Silverstone

It's been left to Leisure Genius master at converting traditional home pursuits (I mean board games dummy!) for the micro to remind us of these joys Perhaps not surprisingly *Scalextric* on the Spectrum bears a striking resemblance to several other motor racing games

There is a distinct advantage over a full scale formula one simulation though – only two cars are involved This means that the split screen two player view works well actually putting you in the driving seat Meanwhile your progress round a map of the track is charted below

So far so good but racing was only half the Scalex story The system also gave you the chance to play God and design your own championship circuits Well that's here too You'll still find that you've misjudged something and the ends won't join up and you can still bend it a bit to force them to! But better than this is the fact that your micro doesn't have to save up its pocket-money for those extra straights you're playing with a limitless supply of track

Track construction is simple, achieved with a cursor and diagrams of the sections You can take pieces away and add everything from skid chicanes to banked curves

Then it's time to race either against a human opponent or the computer You select the number of laps and skill of the micro and it's off round the hairpins and hazards of your own course or one of the 12 international favourites included

While this is undeniably fun I'm not quite convinced of its lasting addictiveness It seems to me that the trick is to be first off the line, after which there is very little your opponent can do other than eat your dust providing you steer accurately There are also one or two rough edges in the programming such as the failure of the lap time to erase itself fully

Still if you're into racing games this one is fun and even simulates that incredible acceleration of the little electric cars 0–240 mph in three seconds anyone? The only thing that seems to be missing is the ability to shoot off a corner and take a chip out of that horrible chest of drawers that was always in the way in your bedroom!

Popular Appeal ♦ ♦ ♦

John Minson

Program *Scalextric* **Micro** Spectrum 48K **Price** £9 95 **Supplier** Leisure Genius, 2–4 Vernon Yard, Portobello Road, London W11 2DX

The glories of the Amstrad

Tony Kendle discovers the solution to paper skludge

I'm talking from bitter personal experience when I say that buying printers is a far from straightforward business. The manufacturers will tell you with great enthusiasm about all the text fonts, or all about Epson compatibility.

However, the list of things it is impossible to find out about are, unfortunately, legion.

We all know, for example, the virtues of having ribbon cartridges which slot in quickly and easily so you don't get messy fingers – unlike the normal inked spool.

What they won't tell you is that their patent cartridge types are stocked by one shop in East Cheam, that they cost £7 a throw and last two weeks, whereas a spool can be bought for £2 from WH Smiths and last two months.

Another nightmare is that you may buy a printer that can churn out text at 500 characters per second, but then it takes you three minutes to position another sheet of paper that isn't going to jam up in a crumpled mess.

One of the favourite tricks is to design the continuous paper feed such that the printed paper gets caught up in the intake again and begins to go round in an endless loop until the whole machine looks like a roll of toilet paper and starts to smoke at the sides.

> *"The new Amstrad is specifically designed to separate intake and output paper"*

If you have 200 pages to print out you can't do anything sensible like going for a coffee but have to stand over the machine like a praying mantis ready to pounce at the first screech of gears and cogs.

Owners of the PCW machines are a captive market. We can't do anything about the lunatic prices, the ribbons for example (I don't know why people complain about disc prices – at least they are reusable!). But now, thanks to Micro-World, we can do something about the problem of continuous paper. The new Amstand is a robust, well-designed device that has been specifically designed to separate the intake paper, which is stacked in a neat pile under the printer and rises up through a slot, from the output paper which goes elsewhere to collect in another neat pile. It also allows easier tearing of the paper and angles the printer so that it is easier to check the printout.

The initial impact of the Amstand is that it greatly increases the size of the PCW. However, when I compare it to the Heath Robinson layout of shelves and cardboard boxes that was my previous answer to the problem it is considerably neater and more compact.

Beware of imitations. A lot of stands have appeared recently for use with the PCW, most of which just allow you to stack paper beneath the printer, but as far as I know Amstand is the only one that tackles the problem of continuous paper skludge. That makes it a winner in my book.

Tony Kendle

Hardware *Amstand* **Micro** Amstrad PCW 8256 **Price** £29.95 **Supplier** Micro World, 1006–1010 Manchester Road, Linthwaite, Huddersfield HD7 5QQ

Elektroglide winners



Congratulations to the 20 winners in our Amstrad *ElektraGlide* competition and commiserations to the 150 odd who weren't picked out of the hat.

If you remember, we asked for the answers to three very simple questions:

1 Who won the 1986 Formula One World Drivers' Championship?

2 Where is the French 24 hour road race held?

3 Which Formula One team did Nigel Mansell drive for in 1986?

The answers were, of course, that Alain Prost won the World Drivers' Championship, Le Mans is the venue of the 24 hour road race and Williams-Honda had Nigel Mansell in the team this year.

For the last question, we also accepted Williams, Canon Honda Williams, etc as valid answers.

The 20 winners with the correct entries, selected at random are:
A J W Tungate, Stowmarket, Suffolk; Mr C Lewis, Kingham, Oxon; C White, Whalley Range, Manchester M16; B Mawson, Slough, Berks; J Balshaw, Preston; Paul Tomlinson, Llanelli, Dyfed; Michael Monk, Rossendale, Lancs; S G Pitt, Maidenhead, Berks; John Marnam, Basingstoke; Mark Cockerill, Scunthorpe, South Humberside; S A Hulley, Hemel Hempstead; Atanasyan, London NW3; Gareth Clarke, Standish, Wigan; N A Hoult, Halesowen, West Midlands; David Jaggard, Huntingdon, Cambs; Reuben Camilleri, Witney, Oxon; Andrew Learoyd, Bramley, Leeds; Andrew Pennington, Huyton, Merseyside; Stephen Norman, Holcombe, Bath and C King, Swinton, South Yorkshire.

All winners should be receiving their prizes shortly.






Feel at home with this program

Homebase is the latest and the best in a line of memory resident utility programs for the PC which started with *Sidekick*. These programs are designed to sit at the back of the computer's memory ready to 'pop up', no matter which program you are running at the time, to provide you with a series of invaluable tools.

Homebase supplies the user with the following. There is a utility for handling disc files, multiple file moving or copying etc. Two small but extremely useful tools are a calculator and a program for cutting a block of text from the screen of any program and recalling it later for pasting into a different file, or a different program altogether. A diary program allows you to enter notes about appointments and set alarm calls that interrupt any program you are running to give you a message. Also provided is a simple editor program that uses a small subset of *Wordstar* control codes for laying out the text.

Highlight of the *Homebase* suite is *Notebase*, a superb database program that is extraordinarily simple to use and very powerful. Data can be laid out in a rigid form if required, using fields of specified names and lengths. These types can be used for mail merge or report writing if required. Alternatively data can be entered in a completely freeform way whereby each record consists of plain text entered using a text editor. The records can be searched to find specified keywords, a process which occurs almost instantaneously.

Homebase uses very fast windows and menu systems to jazz up the display and usually takes up either 170K of memory or just 80K, but in the latter case each utility is loaded in from disc when required. There is a 50–60K limit on the size of each data file.

Write Hand Man is that most incredible of things, a pop up memory resident utility that works in CP/M. It does not of course have the same memory to spare as an

"The highlight of the Homebase suite is Notebase, a superb database program that is extraordinarily simple to use and very powerful"

IBM PC and *WHM* takes up a princely 3–6K. Not surprising therefore that the utilities it provides are much more primitive, and are all loaded off of disc. Given the limitations it is incredible what Hisoft have achieved.

I've reviewed *WHM* before so will not go into great detail except to mention that it has been completely revamped – there are now flashy graphics to accompany some of the programs (such as a display of a calculator). The programs you are supplied with are legion, if simple. There is a calendar, an appointment diary, a notepad, a disc directory, a text file viewing option (with the ability to overtype or to cut blocks to separate files), a calculator and a hex to decimal converter. New features include a macro key definer, a lookup table of Ascii values and a utility that lets you halt the current program, copy it to a disc file, run a new program, then restore the original – a sort of stone age multi tasking.

Both programs are superb value for money.

Tony Kendle

Program *Homebase* **Micro** IBM PC Compatible **Price** £49.95 **Supplier** Newstar, 200 North Service Road, Brentwood, Essex CM14 4EF
Program *Write Hand Man* **Micro** Amstrad CP/M+ **Price** £29.95 **Supplier** Hisoft, The Old School, Greenfield, Bedford MK45 5DE

Forth is the Future

Forth is one of the most unique computer languages around. It looks initially daunting, largely due to the use of a device known as reverse polish notation, which means that to the untrained eye, program listings look like dropped boxes of *Scrabble*. However, Forth has its own internal logic and system of working, so that once you get the hang of it, it makes writing many types of program a fluent and painless process.

The incentive to learn it is that it is a very fast and extremely compact language, with a simple and logical system of disc handling that makes it an easy to use extension of the computer's memory.

On many home computers, memory is taken up by a permanently resident programming language, usually Basic. Any other languages you load have to fit within the remaining available space. This in turn leaves you with very little room for actually writing programs. The Amstrad PCW is slightly unusual amongst home machines because it has no inbuilt languages at all, and everything is loaded from disc. This makes it less of a disadvantage to want to program in a different language. If you then consider how compact Forth is, you soon realise that you can write much longer programs than is possible in Basic. They will also crack along.

Because of its 'compactness' Forth is particularly suited to driving hardware (your computerised washing machine probably works in Forth) but with typical thoroughness, Hisoft has extended the version it sells to make full use of the GSX graphics extension to CP/M. The result is that the language is much better than Mallard Basic for writing graphics programs. It's not Hisoft's fault that GSX is such an ugly tangled spaghetti, but they have tried to make it as easy as possible.

There is of course the limitation that the programs you write will only be valuable to yourself, or to someone else who has bought Forth, but if you do not find this unduly restrictive, look very carefully at this new and powerful language implementation.

Tony Kendle

Program *Forth* **Micro** Amstrad PCW **Price** £19.95 **Supplier** Hisoft, The Old School, Greenfield, Bedford MK45 5DE



Go Forth to Homebase

From the sublime to the ridiculous

The staff of Popular come up with the annual fun-time computer quiz. Test your knowledge of the computer industry. Answers on page 42

Around the Amstrads

1) Amstrad Consumer Electronics was created by
a) Bram Stoker
b) Brute force
c) Lots of underpaid Koreans

2) How did Alan Sugar refer to the Spectrum *before* purchasing its rights from Sinclair Research?
a) A nice little earner
b) A pregnant calculator
c) A terrific games machine which could become the cornerstone of our market

3) How did Alan Sugar refer to the Spectrum *after* purchasing its rights from Sinclair Research?
a) A nice little earner
b) A pregnant calculator
c) A terrific games machine which could become the corner stone of our market

4) Alan Sugar purchased the rights to the Spectrum because
a) It was a logical corporate move to combine the innovative intellectual talents of Sinclair with the proven marketing expertise of Amstrad
b) It gave Amstrad dual price points within the significant market area and a position of dominance in the consumer micro field
c) It seemed like a good idea at the time

5) The Amstrad PCW is
a) A word processor
b) A great way to look like you're working when you're actually playing games
c) Making a lot of Koreans very happy

6) A fan was installed on the PC 1512 because
a) The machine was overheating
b) Alan Sugar was overheating
c) Amstrad's customers were overheating

The software scene

7) The major licensing deal of 1986 was.
a) Star Trek
b) The Jeffrey Archers
c) Meltdown at Chernobyl
d) Alex Higgins' Karate

8) The major licensing deal of 1987 will be
a) Star Trek
b) Ronnie and the Gun Runners
c) Meltdown at Sellafield

9) Mastertronic's Alison Beasley has an interesting tattoo. Is it?
a) A £1.99 price sticker on her shoulder
b) A spiderweb on her ankle
c) Clumsy Colin Action Biker between her shoulder blades

10) Activision software is:
a) A moving experience
b) Experiencing a move
c) Moving to Southampton for the experience

11) What is Off the Hook?
a) The telephone of that mail order company you've been trying to trace for weeks
b) The wacky name of a games compilation sold only [illegible]

Alex Higgins testing his new tie-in? See Q 7

c) Software you can buy and load straight away without tailoring the program to remove the bugs

12) In 1986, the computer game whose quality most closely matched its subject matter was
a) Bobby Bearing
b) Trailblazer
c) Marble Madness

13) Elite is
a) A never to be surpassed game for the BBC
b) What you call the fourth version of your multi-interface add on, having gone through Plus, De Luxe and Turbo already
c) A software company where the employees have the best jobs in the world: they play arcade games all day and convert them to micros in their dinner break

14) What is the most important car accessory for the MD of a successful software company?
a) Go faster stripes
b) Cellular phone
c) Furry dice

15) World Cup Carnival was.
a) A welcome re release of a favourite game with the bonus of excellent packaging goodies
b) Used by the Scotland World Cup team in their pre tournament training
c) US Gold playing a practical joke

The Good Old Days

16) Sinclair's best-selling ZX Spectrum is based on
a) The Zilog Z80
b) Recycled bits of Black Watch
c) Suspension of disbelief

17) The Sinclair Spectrum has sold over three million in the UK
a) True
b) False
c) Economically true – how many are still working?

18) The manufacturer with the largest commitment to the MSX standard is
a) JVC
b) Toshiba
c) Daft

19) Which of the following best describes MSX?
a) Ahead of its time
b) Too little, too late
c) Became cheap at half the price

20) The Acorn Electron was first launched in:
a) 1983
b) 1984
c) Error

21) The most obscure micro in the world is
a) The Laser 2000
b) The Dogbolter 65
c) The Vic 10 (sic)

22) If I had a hammer, I'd:
a) Hammer in the morning
b) Hammer in the evening
c) Get rid of my Enterprise

23) Which of the following is the odd one out and why?
a) Groucho Marx
b) The Sinclair QL
c) Jimmy Tarbuck

Back to the Future

24) The next version of the Spectrum will be
a) Called the Spectrum 256 Plus 3
b) Attached to a disc drive, with a different set of non standard joystick ports
c) An Amstrad

25) Sir Clive Sinclair is working on.
a) A small black car phone which will fit into

continued on page 32 ▶

The Popular Quiz

◀ continued from page 31

the palm of you hand
b) A small black satellite dish that will fit into the palm of your hand
c) A small computer company that will fit perfectly into the palm of Alan Sugar's hand

26) The Amiga is
a) The leading edge of computer technology
b) Great at bouncing balls
c) Overpriced

27) The Amiga's PC emulator is known as Sidecar because
a) Hardly anyone would be seen dead with one nowadays
b) It's uncomfortable to sit in one for any length of time
c) It makes the Amiga fall over if you corner too fast

28) The Commodore 64C is
a) A dressed-up Commodore 64
b) A cut down C128
c) The product of a drunken marketing lunch

29) This time next year there will be
a) Lots of computer manufacturers but only one software house left
b) Lots of software houses but only one computer manufacturer left
c) No computer manufacturers, no software houses and one very thin magazine left
d) Lots of opportunities in accountancy

30) The latest model of Atari's ST is
a) Not out yet
b) Out next month (honest)
c) About to be superseded by a more powerful model

31) Was the Atari 1040ST so called because
a) 1 megabyte of memory is 1 048 576 bytes
b) £1 040 is what Atari wanted to charge for it
c) It commemorates the number of executives fired when Jack Tramiel bought the company

Arcade Teasers

32) Impossibly over-ambitious coin-up conversions for 8-bit machines are
a) Impossibly over ambitious
b) Getting a bit boring
c) Best played after 15 pints of weak lager shandy

33) How many coin-op conversions have there been in 1986?
a) 2 354 701
b) Less than 2 354 701
c) Don't know but it feels like 2 354 701

34) The best thing about coin-op to micro conversions is
a) Not having to put any money in
b) The chance to play popular sophisticated games at home in your own time
c) The loading screen

Micros International

35) Why did the Reagan/Gorbachev talks break down in Reykjavik?
a) Incompatible ideological differences
b) They couldn't get *Fat Worm Blows a Sparky* to load
c) They ran out of hair dye

36) France doesn't have a major indigenous home micro industry producer because
a) The French are a lot more sensible than you thought
b) They've got Oric instead
c) Pommes frites squidge when you try to plug them into the circuit board

37) If Rainbird was named after Tony Rainbird, then who is Red Rat named after?
a) Ken Livingstone
b) Josef Stalin
c) Mikhail Gorbachev

38) Which of the following is the odd one out and why?
a) US Gold
b) Acorn
c) Clint Eastwood

39) Is Gallium Arsenide
a) The Italian champion in Ladies Downhill Skiing
b) Something big in the murder business
c) Something big in the computer business

Above: Alan Sugar over heating? See Q. 6
Below: What does this screen depict? See Q. 40
For all the answers see page 42

Bits and Bytes

40) The screen above shows
a) The latest development of the Lenslok protection method (use a 16 segment foldout lens to line up all the characters to form excerpts from the Battle Hymn of the Republic)
b) A QL prototype displaying its prowess
c) An early version of Jeff Minter's latest opus

41) Micronet means
a) The hi tech, fast speed, user friendly communications medium of the future
b) Very sheer silk stockings
c) Sending messages saying "Hello Brian, I'm using a trusty WS4000 with inbuilt software connected to my humble Speccy" to people you've never met and paying astronomic phone bills

42) What is the optimum number of buttons on a mouse?
a) One
b) Two
c) 65 including cursor cluster and numeric keypad

43) What do you understand by the number 3.1416=π?
a) Commodore's bank balance
b) The ratio of the circumference of a circle to its radius
c) Funny Greek squiggle

44) Reverse Polish Notation is
a) An accounting system used in Eastern Europe
b) Designed to make you think Basic's not so bad after all
c) Used when exporting outmoded micros to the Eastern Bloc

45) A 'BT approval' sticker on a modem means'
a) They liked the colour
b) The modem, having been submitted for approval aeons ago, is now technologically out of date
c) Barry Took bought one

46) What was John Cleese recently advertising on television
a) Saveloy and chips
b) Double decker buses
c) Compaq computers

47) What is MOS
a) Something a rolling stone does not gather
b) Metal oxide semi conductor
c) A famous printing error who used to drive racing cars

48) The most useful item in a programmers' toolkit is.
a) An interactive assembler, disassembler and debugger
b) AUCS – Automated Uridium Cloning Software
c) A jar of Nescafe

49) Half baud is a technical term for
a) Bed, breakfast and an evening meal
b) The slowest speed of data transmission
c) The highest level achieved by players of Saxxon.

50) When a peripheral company says that it is 'very low on stocks at the moment', it means
a) It's very low on stocks at the moment
b) The product only exists as a drawing on a sheet of graph paper
c) The product is finished but no one has worked out how to interface it to any micros yet





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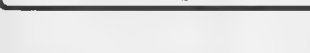
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This advert drawn on Atari ST using EasyDraw and printed on MP165 dot matrix printer

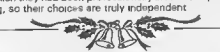
Now that's what I call software

Christmas is a good time for self-indulgence, so it seems like an excellent opportunity for the *Popular* staff and columnists to nominate their personal favourites among this year's computer programs

Being generous souls, we also asked some well-known computer personalities to let us know what they would like to include on an all-time great mixed machine compilation – Now That's What I Call Software

The micro celebrities however, were expressly forbidden to nominate anything for their compilations which they had been professionally involved in producing, so their choices are truly independent







The staff

Peter Worlock – Managing Editor

1 A clear cut leader, the piece of software I've loaded most often in the past year – **Sargon III** chess on the Macintosh No trendy 3D graphics just a very clear 2D display and a great opponent

2 Another oldie Activision's **On-Field Football** for the Commodore 64 In my opinion still the outstanding American Football game on any computer This is real time action where you not only choose the plays but get to carry them out If anyone manages to combine the strategic element of *Head Coach* with the action of *On-Field Football* I'll sell my features editor to white slavers to pay for a copy

3 On the subject of sports simulations, there has to be a place for **Leaderboard** – but only the Atari ST version That's the trouble with the ST – it makes you dissatisfied with everything (except a Macintosh)

4 And speaking of the Macintosh (Tenuous Link No 3), I'd have to include **Microsoft Basic** on the Mac A strong contender for the title Best Basic of All Time *MS Basic* has everything except line numbers (unless you really want them) If I was allowed to own only one piece of software, this would be it

5 Thankfully in a free democratic society there's no rationing of software so PSS's wonderful **Annals of Rome** (due out soon) makes the list as well Unleash your megalomania ponder the pitfalls of imperialism send ambitious rebellious old senators to face certain death at the hands of the hairy barbarian hordes

6 In similar vein any SSI wargame – **Normandy Landing, Tigers in the Snow, Field of Fire, Combat Leader** Or even better all of them

7 A bit of a cheat this one because it's really two programs The package in question is SubLogic's **Jet** an awesome flight simulator in which you fly a carrier- or land-based fighter bomber One of the bonuses with *Jet* is that you can use all of the scenery from SubLogic's *Flight Simulator II* – so I get to sneak that one in as well

8 Last, but not least, **The Bard's Tale** from Electronic Arts and Ariolasoft which I rate as the best computer role-playing game to date

Some nice original touches combined with a well designed magic system, great graphics and a quest of truly heroic proportions make this a game that will keep you going through most of 1987

Christina Erskine – Editor

1) **Leaderboard** on the Atari ST has to be the game of the year for me Its superb graphics and animation, realistic gameplay and the cleverly designed courses have led to a daily *Popular* office *Leaderboard* tournament Possibly the best reason yet for buying an ST

2) **Dan Dare** was easily one of the best if not the best licensing deal ever One of the few I've seen to fully keep the flavour of the original on the screen The comic book style messages and the excellently reproduced graphics are an absolute delight

3) I never quite got on with **Scrabble** in its previous incarnations, but the PCW version has me well and truly converted While the computer still has a nasty tendency to block up the board the dictionary seems substantially larger, and it provides a worthy opponent

4) With two Bridge programs out this year, it's difficult to choose between **Colossus 4 Bridge** and **Infogrames Bridge,** both of which are miles better than any other Bridge program *Colossus* has all the practice options you could ever want while Infogrames, I think, just has the edge on play

5) On the adventure front, Level 9 showed no signs of slipping with **The Price of Magik,** with plenty of spell-casting and lateral thinking puzzles

6) However I've got quite far with *Price of Magik* so I'd want to add another adventure to the compilation **The Pawn** seems like a boringly safe choice





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especially as so far I ve only gawped at the pictures rather than really got into the nitty gritty of the adventure

7) Going back to last spring **Get Dexter,** imported by PSS from France gave CPC owners the opportunity to cook a very large snook at their Spectrum and Commodore owning friends Wonderful graphics and some great visual puzzles

8) Finally I d include **Alter Ego,** one of those Californian programs which you felt sure would prove to be a terrible disappointment However it is exceptionally well-programmed, and provides a good few hours of highly introspective entertainment

Chris Jenkins – Supplements Editor

1) Uridium (Commodore 64)
Uridium is so slick that it makes even the best of its competitors look feeble – the only arcade game I ve been compelled to finish

2) C-Lab (Commodore 64)
Midi music package for the technologically hip (hop) Real time step time note-by note editing chaining, copying – Pet Shop Boys look out Probably only bettered by the Atari ST version

3) Artist 64 (Commodore 64)
If you thought Wigmore House s *Cheese* graphics package was fun, wait until you see this one Coupled with the MS-2000 mouse, *Artist 64* does things which leave the competition floundering Potato printing for the micro age

4) Mercenary (C64, Atari 6-bit and ST)
Although I don t have the patience to complete this sort of game the brilliant idea of combining 3D wire-frame graphics shoot em up action and the devious complexities of an adventure game must make Novagen s *Mercenary* the shape of things to come

5) Print Shop (C64)
Precision s handy-dandy DIY letterhead greetings card poster notice leaflet designer gives you thousands of graphics lots of fonts and plenty of options What every printer should be used for

6) Microrhythm (C64)
Firebird s boom in-a-box digital drum machine program provides hours of heavy metal mania for the unbelievable price of £1 99 Ignore this one and you have no soul

7) The Pawn (C64, Atari ST)
Call me weak call me biased but no arm-twisting from the fascinating Anita Sinclair was necessary to force me to include this most absorbing of adventures Off the well wit, fancy graphics and at last, a decent text interpreter Magnetic Scrolls finest hour – until the next one

8) Star Trek (ST)
OK it isn t out yet but on the strength of the demos Beyond s epic, complete with Klingons, photon torpedoes, dilithium crystals and pointy eared Vulcans looks like being the kind of thing to keep you playing long into the 23rd century

John Lettice – News Editor

IT S all very well being asked (well ordered, actually) to produce a list of personal all-time hits but it becomes just a tad difficult when Ms Piggy goes and tells you to select your eight favourite games from the past year If the deadline s extended back to around 1984 it s possible to produce eight but a substantial scour of the 1986 backlist reveals three that are an unalloyed joy (*Heart of Africa* *Starglider* and *Alter Ego*) and another half dozen I wouldn t mind playing if my wrists were superglued to the keyboard

Fortunately the conversion industry comes to the rescue with even the incredibly geriatric all time great *Football*

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GOAL!
BBC/Electron
The first realistic football simulation for the Electron featuring excellent graphics music and an intelligent opposition that actually adjusts its skill level during the game depending on current state of play
Cass £7.95
FUTURE SHOCK
BBC/Electron
An amazing new style of Arcade game with inter-active sub plots using large detailed graphics for superb detail. This game pushes the machine and the player to unparalleled limits for many hours of enjoyment making this a game not to be missed
Quote from Electron User – December Issue
"Future Shock is an excellent program, a game which overflows with character and humour" "Overall Rating 9/10"
£7.95 Cass.
WHO DARES
WHO DARES WINS II
C16/+4
At long last a conversion for the C16 of a No. 1 Hit that lives up to its original. Over 40 screens of fighting action (more screens than the original 64 version)
Cass £7.95
JET SET WILLY II
C16/+4, BBC/Electron
Over 90 screens of this classic game will give even the most skilful player the ultimate challenge
£7.95 Cass.
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Manager having been released in a new format (C16/Plus 4) this year Add these in and you can produce a list that you could conceivably call software

First of them is **Elite,** only two years old but rejigged for the 128K Spectrum over the summer As with the Spectrum 48 the action slows right down when the screen s full of ships but the sound is more convincing and prices of narcotics vary enough to make them awfully tempting Tape format is incompatible with the 48K versions so you can t load your old rating but it s well worth starting again

The late great Beyond (promising a resurgence soon with *Star Trek*) is also a godsend having released **Doomdark's Revenge** on the 64 and CPC this year. Beyond has come in for a fair bit of slagging over the past year but Mike Singleton s trilogy (third part apparently still pending) is eminently playable and just about makes it all worthwhile

Starglider can have a home in my stocking any time provided it s the ST version The ST version The ST original is certainly one of the year s classics and while the 8-bit versions are playable even impressive by 8-bit standards when you compare the two it s apparent that the frills in terms of sound and graphics on the ST version make the game

F-15 Strike Eagle isn't the most accurate of flight simulators (which are something of a speciality of the IBM PC and clones) but is certainly one of the most playable None of that nasty messing around with take-offs and landing, just fly shoot and bomb the commies Great stuff (copyright P Worlock)

The arrival of the Amstrad PC is also responsible for the classic **Seven Cities of Gold** reappearing (Amiga version also launched this year) As far as graphics go the game is frankly feeble, but the lure of the untold riches of an undiscovered continent was enough to keep me playing night after night This plus the more recent but still graphically diabolical *Heart of Africa* justifies Ariolasoft s existence

Annals of Rome, on the other hand is proof that they do make them like they used to This isn t wholly flattering as they used to make them in Basic and at time of writing PSS is still pulling the bugs out of the Spectrum version but the pre-release was good enough to compensate for slowness and the ever-present danger of crashes Highly playable and a passable simulation of 1,500 years of history to boot so go for it when it hits the shops

The eighth of the greats is tricky — should it be *Alter Ego* or is that just too wimpy? *Rebel Star* (budget re-release from Firebird) is a somewhat old bargain, while *Tomahawk* and *Strike Force Harrier* on the PCW are just too techy so I suppose it has to be **Football Manager**. Anybody want to sell a C16?



John Cook — Features Editor

1) Ghosts and Goblins (Elite — Commodore)
Best coin op conversion this year — though the Amstrad version had us falling about

2) Splitting Images/Split Personalities (Domark — Spectrum)
Nothing to do with the TV programme natch — but great puzzle/arcade action all the same

3) Leaderboard (US Gold — ST)
The best multi player sports simulation in existence — there might not be $150 000 on the final putt but it's the closest most of us are going to get

4) Phantasie (SSE — import — ST)
I used to play Sword and Sorcery by post — this is the nearest thing I ve got to it on a home computer

5) Uridium (Hewson — Commodore)
Best shoot em up available An Andrew Braybrook classic

6) Thrust (Firebird — Commodore)
One for the purists — average graphics and sound but just feel that gameplay

7) Sentinel (Firebird — BBC)
Totally original game of energy in an alien landscape — wondrous

8) Balance of Power (Mirrorsoft — Macintosh)
Superb mind-bogglingly deep simulation of world geo-politics One day all games will be like this

PS Fads of 86 included white Toblerones Feast ice lollies *Leaderboard* the Amstrad PCW and Deep Thought

Duncan Evans — Technical Editor

I crawled off the floor took an aspirin and mugged Santa for the following

1) Leaderboard (ST)
The game of the year with arcade quality graphics Ah, the joy of teeing off hitting trees ploughing into bunkers and chipping into the lakes Probably the only game worth sobering up for at Christmas

2) Uridium (C64)
Brainless but wonderful, as any good shoot em up should be The classic game that launched a thousand rip-offs

3) Time Bandit (ST)
Massive playing area adventurish puzzles, better graphics, more playable and more interesting than all of the *Gauntlet* clones

4) Psion Chess (ST)
Assuming that the old brain has recovered by the New Year it might feel like thinking In which case, this, the ultimate

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in micro chess programs will be booted up

5) Phantasie (ST)
Listen John, I say *Phantasie* is the best fantasy role playing game around. You don't agree? Well see this it's a +10 sword

6) Elite – second processor (BBC)
I seem to have run out of this year's games already. Anyway this is still the greatest space combat and trading game since *Star Trek* hasn't arrived yet. Kill a Thargy and win a Metro!

7) Mr Ee (BBC)
Another golden oldie. Rush around eating cherries, digging tunnels, dropping rocks on rampant bogies. A jolly tune and great graphics make this the best version of the old arcade game

8) Doomdark's Revenge (C64)
Wargaming meets adventures. Nice 3D graphics, great gameplay

The Contributors

Tony Bridge – Adventure Corner columnist

1) I would include a good word processor eg Microsoft's **Word**

2) Any Infocom adventure
But if it has to be one only I'd prefer one of the more interactive program like *Witness*, *Mind Forever Voyaging* or my favourite (and I still haven't finished it) *Suspended*

3) A good knockabout role playing adventure like **Phantasie, Rogue** or **Ultima** – or a decent arcade like **Gauntlet.**

4) Jewels of Darkness
To keep me away from civilisation

5) Rainbird's Advanced Music System

6) Trivial Pursuit

7) GAC or The Quill
So that I can concentrate on that sensational adventure I've been meaning to write

David Wallin – Communications

1) Tomahawk (PCW)
Addictive and hard

2) The Hobbit (Spectrum)
I have an ambition to complete it!

3) Comm Plus (PCW)

4) Way of the Exploding Fist (Spectrum)
It's addictive and I'm addicted

5) Elite (BBC)

6) Tankey 2 Finger Typing Course (PCW)
I might as well include something useful

7) Hitchhikers Guide to the Galaxy (PCW)

8) Paperboy (Spectrum)

Mark Jenkins – Computer Music

My compilation is fully intended to be used with a good complement of synthesisers, drum machines and other goodies – enough for a separate compilation, in fact

1) Steinberg Pro 24
The massive Midi composer for the Atari 520ST

2) C-Lab SuperTrack
By far the most powerful of the Midi composition packages for the Commodore 64

3) Atari 520ST Colourspace
Compulsory accompaniment for any musical flights of fancy

4) Ruma K-Switch
Just being greedy here – so I can use any two other programs simultaneously

5) Tron Digidrum III
Assuming I can have the hardware as well, a great digital drum machine for the Commodore 64

6) Steinberg Pro 16
Another Midi composer for the Commodore – not quite as wonderful as C-Lab but compatible with

7) Steinberg TNB
Which turns all your compositions into neatly printed music

8) Easy Script
Ageing but still adequate for most purposes

Tony Kendle – Arcade Action columnist

1) Heartland
I really have had a hard time knowing what to pick *Uridium*, *Gauntlet* or *Druid*, *Light Force*, *Tau Ceti* etc. In the end I have had to settle for *Heartland*: it is captivating me the most at present

2) Chaos (Games Workshop)
My favourite oldie *Halls of The Things* is *too* old to qualify for this collection but *Chaos* is something I rate nearly as highly and does fit into a two year limit

3) The Pawn
At some stage I will have time to get involved in an honest to goodness adventure game and see it through to the end. It really must represent the genre and have lots about the elves of Barg, the Kingdom of Tharg and the great sword of Yarg. I have already played *Jewels of Darkness* so *The Pawn* is the obvious choice as the best adventure available

4) Marble Madness
I've got to have an arcade conversion somewhere and since this is by far the best here it is (Amiga version of course)

5) Advanced Music System
Something to while away the hours – the only program to date that comes close to fully exploiting the musical strengths of micros whilst being easy to use

6) Prestel-Link (Cirkit)
I'm not sure if this is cheating but what a veritable Pandora's chest of cheesy jokes, useless facts, dire games, mindless chatter and breathtaking ZX81 quality graphics Prestel is

7) Laser Basic and compiler
The superb *Laser Basic* is really a thousand games in one as long as you have time to design the sprites. My best efforts so far depict a squadron of A's attacking the valiant spacecraft ** If

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you score a thousand points you get an extra smart ■

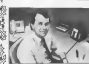
8) Fleet Street Editor
I find all page layout programs fascinating – there's something appealing about being able to produce superb looking documents without any Letraset and have fun at the same time



Kenn Garrock – Peek and Poke

1) Super Mario Brothers (Nintendo games console)
2) Starglider (ST)
3) Sub Logic Jet (Compaq 386 – It's gotta be fast!)
4) Microsoft Basic (Macintosh)
6) Prestel (BBC)
6) Sentinel (BBC)
7) Elite (BBC)
8) Acornsoft Meteors (BBC)







The 'Celebrities'

John Rowland – Merchandise controller, W H Smith ***(John was virtually solely responsible for the introduction of computers into the High Street stores, when he set up hardware selling at W H Smith with the ZX81 machine)***

After much headscratching and nostalgic thumbings through the older order files, I have got together my eight favounte programs. As you can see, there is a hint of nostalgia in the choices

1) 3D Monster Munch (ZX81)
2) Choplifter (Apple II)
3) Ant Attack (Spectrum)
4) Chess the Turk (Spectrum)
5) Kennedy Approach (C64)
6) Leaderboard (C64)
7) Hacker II (ST)
8) Leather Goddesses of Phobes (ST)

David and Richard Darling – Code Masters

1) Thrust (Firebird)
2) Speed King (Mastertronic)
3) Viomen (BugByte)
4) Amek (Audiogenic)
5) Arcadia (Imagine)
6) Spiders of Mars (Audiogenic)
7) Night Mission (Digital Integration)
8) Space Invaders (Atari)





Andrew Hewson – Hewson Software

1) Starglider (ST)
Because everyone's on about it
2) Word Star
3) Trivial Pursuit
With regular question updates
4) Space Invaders
What else!
5) Defender
A nice simple blast
6) Gauntlet
7) Senxion
Because I like the music

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Rob Hubbard — composer, music for The Last V8, Monty Mole, etc

1) Marble Madness (Amiga)
2) Leaderboard
I don't play golf but I like the game and the micro version is very well done
3) Super Cycle
4) Parallax
5) Glider Rider (Spectrum 128)
It's got a very good David Whittaker sound track
6) The Eidolon (Atari 800XL)
Better than the Commodore version — the 800XL really is an amazing machine
7) Revenge of the Mutant Camels
This game promised that the Commodore 64 really could do something. I regard Jeff Minter as a very original programmer
8) Thing on a Spring
OK, so I wrote the music but I always turn the sound off when I play it

Greg Follis and Roy Carter — Gargoyle/FIL

1) Ghostbusters
Not a particularly great game but the music on the Commodore version makes it all worthwhile
2) Pacman
Simple and effective and perhaps we have a thing about ghosts — "Sorry m'lud, we thought you said goats"
3) Jetpac
Pure nostalgia — this is the game that decided us to start writing our own
4) Hitchhikers Guide to the Galaxy
We've spent many a happy hour on this one — but then, according to Ford Prefect, "Time is an illusion — lunchtime doubly so"
5) Elite
We never really got into the game so perhaps it's time we discovered what we're missing
6) Trivial Pursuit
Something to have a argument about! Tranquility and harmony is for moon and hairsprays
7) Microlink or Cnet software
Because they work first time while their business counterparts take about six months to put into operation
8) Wordstar (PCW8512)
Without which nothing would get done

David Jones — programmer, Finders Keepers and Knight Tyme

1) Jet Set Willy
This game is a classic platform game but also it is probably the most hacked game in the entire universe. I have never completed the game even with infinite lives and so I think I could have a lot of enjoyment playing and hacking it
2) Lords of Midnight
I found Lords of Midnight very entertaining and I would love to complete it. Of all the adventure games that did not work on text input I found this the most atmospheric and I spent quite a while playing it before I gave up
3) Zork Trilogy
I have recently bought *Wishbringer* from Infocom and nearly completed it so I would want a different adventure to play. The *Zork Trilogy* also by Infocom would probably take me a while to solve. I like the atmosphere generated by these games
4) Knight Lore
Although there have been other 3D games I still play this one more regularly than the others. Later games such as *Alien 8* are technically better but as far as I am concerned they lack a lot of the atmosphere of the classic *Knight Lore*
5) The Pawn (Atari ST)
I have been playing this with some of my friends for a few weeks now and our total score is still only 30 so I suspect there are quite a few surprises waiting around the corner in this game. I also appreciate the sense of humour of the authors and some of the puzzles seem very devious
6) Psion Chess
I like chess and this program plays a pretty good game on the Spectrum though if demonstration versions of the board are anything to go by I would like to include the Atari ST version
7) Bomb Jack (Amstrad)
This game kept me interested for weeks and I would include it in my selection of games because it is a good shoot 'em up
8) The Quill, Illustrator & Patch
Although this is not strictly speaking one program I would still like to include all three so that I could write a decent adventure. I have not used *The Quill* for any serious projects yet but I know that it is a very flexible tool for adventure writing and I am sure it would keep me entertained for a long time

Andrew Braybrook — programmer, Uridium

1) Colourspace II (ST)
2) Dropzone (Atari 800)
3) Pathfinder (Atari 800)
4) Sheep in Space (C64)
5) Commodore Macro Assembler
6) Ultrafont Plus character editor
7) Sprite Magic — Sprite editor
8) Marble madness (Amiga)

The answers to all our questions

Popular Quiz answers

Add up your total votes very carefully and read the conclusions below

Around the Amstrads

1) a 0 b 2 c 1
2) a 0 b 2, c, minus 5
3) a 5 b 1 (he still said it) c 2 (well, he had to didn t he?)
4) a 1 b 1 c 5
5) a 1 b 2 c 2
6) a 0 (this is not *why* the fan was installed) b 5 c 2

The software scene

7) a 1, b 0 (only as a budget title) c minus 2 (not even Bug-Byte would stoop to that), d 1
8) a 1 b, 0 c $\frac{1}{2}$ (Would Bug-Byte stoop to this?)
9) a 2 (good guess), b 5 c 0
10) a, 2, b 2 c, 2
11) a 3 b 1 c 0
12) a 1 b 1 c 1
13) a 5 b 0 c 3
14) a 3 b 4 c 5
15) a 0 b 2 c 5

The Good Old Days

16) a 2 b 0 c 1
17) a 1 b 0 c 2
18) a 2 b 1, c $\frac{1}{2}$
19) a 0 b $\frac{1}{2}$ c, 3
20) a 2 b 0 c, 1
21) a 2 b minus 2 c, 4
22) a 0 b 0 c, 5
23) a, 0 b 0 c 3 (No one ever laughed at Jimmy Tarbuck)

Back to the Future

24) a score 5 if you have inside information from Amstrad and know this to be true otherwise 2, b, 2 for a good guess, c 2
25) a 1 b 2 c 3
26) a 1 (you re reading too many computer magazines), b 0 c 1 (far too many computer magazines)
27) a 0, b minus 1 (it sits in the Amiga dummy) c, 5
28) a, 2 b, 1, c, 3
29) a 0 (unlikely), b, $\frac{1}{2}$ (slightly less unlikely) c 0 (we re optimists) d 2 (always have been, always will be)
30) a 1 b 2 (sounds familiar), c, 3 (sounds very familiar)
31) a 1 b 0 c 2

Arcade Teasers

32) a 0 b 0 c 2
33) a 0 b 1 c 3
34) a 0 b 2 c 1

Micros International

35) a 1 b, 3 c 0
36) a 2 b minus 3, c 0
37) a 0 b, 0 c 0
38) a 0 b 0 c, 5 (Clint Eastwood never shot anyone in the foot)
39) a minus 5 b 0 c 2

Bits and Bytes

40) a 3 b 0 c 0
41) a 0 b minus 5 c 5
42) a 3 b 0 c minus ten
43) a 1, b 0 (too clever by half c 3
44) a 0, b 1, c 0
45) a, 1, b, 3 c, minus 2
46) a 0, b, 0, c 1
47) a 1, b, 2 c 0
48) a 1 b, 0 (there are now so many *Undium* clones that the utility has lost all its effectiveness) c, 5
49) a 0, b 1 c, 2
50) a, 0, b 1 c 1

Over 150 points – Liar

You can t possibly have got this many without peeping at the answers

100–150 points – Telephone Tapper

There s not much in the micro industry slips past you Presumably you have a direct hotline to Alan s car-phone

50–100 points – In the Know

You certainly know how it all ticks but some of the finer details are missing Make that working lunch with Ocean/US Gold once a week instead of once a fortnight

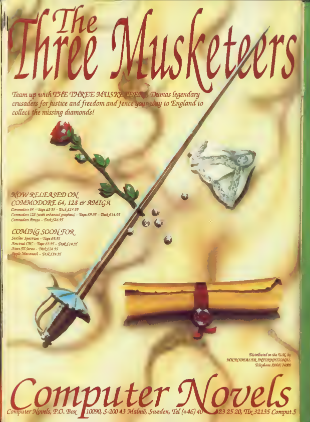
25–50 points – Dabbler

Your inside knowledge may impress them at the snooker club, but you haven t really got inside the programmers heads Need to read *Popular Computing Weekly* more often

0–25 points – Sane

Excellent score – the questions were all ridiculous anyway


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POPULAR
Computing
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1986
Dec 18–Dec 31

COMPUTER GRAPHICS

With the Atari 520 ST making such an impact in the computer graphics field it would be easy to assume that other machines were completely out of the running. However, as you'll see from this supplement, eight bit micros such as the Spectrum, Amstrad CPC and Amstrad PCW are not being neglected by any means.

Sequelitis seems to have hit the applications field, with **Degas Elite** on the ST, and **Artist 2** and **Advanced Art Studio** on the Spectrum updating already successful programs.

A new name, Magister software, debuts with the impressive **ArtScribe** on the ST and for the Amstrads, the **Electric Studio** video digitiser sets new standards for image handling.

Overall, it's going to be a colourful Christmas for your computer! ◀

The colour spectrum

CHRIS JENKINS ON THE LATEST VERSIONS OF TWO OF THE MOST SOPHISTICATED SPECTRUM GRAPHICS PROGRAMS AVAILABLE

So far as the Spectrum is concerned the battle between rival graphics packages has never been hotter or more exciting. The latest versions of two of the most sophisticated programs available are now in the shops and choosing between the two requires a detailed look at their respective claims to fame.

Rainbird's **Advanced OCP Art Studio** is designed for the Spectrum 128k or Plus2, so bear in mind that many of its facilities are not available on the standard 48k version. Softek's **Artist 2**, however is for any Spectrum, but features a number of extra utility programs which are loaded separately.

Having completed the incredibly long loading procedure – thankfully things are improved by the removal of the dreaded Lenslok – you find yourself looking at a clear drawing area with a series of menus at the top of the screen. All the facilities of the original Art Studio are found in the Advanced version, some of them with

Rainbird's Advanced Art Studio

significant improvements. The screen cursor can be directed using the keyboard, Sinclair/Kempston/Cursor joysticks or a mouse. A suitable optical mouse is available for £55.95 from E E C – details are enclosed with the Art Studio package.

The basic facilities of the Art Studio are accessed by clicking on a menu to pull down a selection of options, then using the cursor to highlight the required routine. These include sixteen different pen shapes, sixteen user definable brushes, windows which can be defined, inverted, cut out and moved, stretched, rotated and enlarged, solid fills and both preset and definable fill patterns, three levels of zoom, font editor with nine fonts, plus the usual lines, points, rectangles, triangles, circles and rays. Together with full save and load routines for pictures and fonts, and full printer support, the Art Studio offers practically any facility you could require.

The Advanced Art Studio improves on the original in five major areas. Most useful is the Ramdisk facility made possible by the 128K's extra memory. 48k becomes available as on board memory and 16k as a "scrapbook". The Ramdisk allows you to switch from one task to another without having to wait for data to load from tape or microdrive – (that's another improvement, the Advanced Art Studio supports up to four microdrives).

The Ramdisk facility is accessed

through the File menu. Select this and you are presented with a catalogue of files on the Ramdisk, and the option to load from there or one of the four possible microdrives.

The Ramdisk comes filled with some demo pictures, fill patterns, brush shapes and so on. The files shown are "context dependent": in other words, which of the Ramdisk files displayed will depend on what function you accessed last. The total capacity of the Ramdisk is 49 entries, which you can scroll through eight at a time.

If nothing else, the Ramdisk facility is useful for putting at your command dozens of new texture patterns, which are very tedious to design yourself and store on tape. The same applies to the new fonts available, which include hi tech, italic, square and stencil.

Even more useful is the "scrapbook", where graphic bits and bobs can be filed away and retrieved, then incorporated into your own main design using the cut and paste facility. Although the Scrapbook routine is rather hidden away under the Miscellaneous menu, it's very useful for storing, say, logos or technical designs which you want to use over and over again.

Another new facility is found on the Shapes menu. Arc (a section of a circle) is defined in terms of two end points, and a third to define direction and curvature of arc. A staggeringly useful facility, especially if you don't have a mouse but have to try to draw smooth curves with a directional joystick.

Installing the Advanced Art Studio is somewhat complicated. You must make a working copy by transferring some of the master files to a blank cassette or microdrive, meanwhile defining the printer codes you want to use, the contents of the Ramdisk, the control device, and so on and so forth. Having done this, your working copy of the program should be customised exactly to your requirements.

At £24.95, plus the cost of a mouse if you want to make the most of its facilities, The Advanced Art Studio is clearly not an

Artist 2's main display



Artist 2's advanced sprite designer routine

impulse purchase. Buy it, though, and you'll be getting a package with enough power to squeeze the maximum out of your 128K Spectrum.

The alternative, Softek's Artist 2, has many similar facilities, but is in many ways better for fine detail work and merging images together. Since it's designed to work within 48K, it doesn't have the Ramdisk facility, but does come with several exciting extras on the cassette, a sprite and font designer, page maker and text compressor.

Menus

Artist 2 supports the Kempston or AMX mouse, joystick or keyboard. Like Art Studio, it features a row of menus at the top of the screen, which are pulled down to access further options. At the bottom of the screen are a selection of icons for circle, square, fill, zoom, and other options. The zoom function is particularly good because, apart from having a selection of magnifications, it will also display a magnified section on a 'split screen' with the main picture for easy reference.

The other major improvement is the cut and paste routine. Now you can cut out any shape – not just a rectangle – and repaste it anywhere on the screen. It's also possible to define a window – any shape – and fill it with part of another picture.

Windows can be rescaled (in black and white), scrolled, and thickened or outlined. Since you can define a window which covers the whole screen, it's also possible to apply these functions to your entire picture.

One drawback of Artist 2 is that if you want to use any printer other than with Kempston E or Opus Interfaces, you have to modify the Basic code yourself to support the interface. There are, however, four options for printer dumps, with different sizes and stippling effects.

The additional programs with the Artist 2 package allow you to design and animate sprites (including a mask generating feature which would be of enormous help to games programmers), and to design your own fonts and fill patterns. Also included is Page Maker, which allows text files from Softek's The Writer to be incorporated with Artist 2 graphics to create pages up to 96 lines long and 64 characters wide.

The final goodie is a screen compressor which allows you to squeeze picture files down to between a third and a half of its normal size.

Overall, then, your choice between Advanced Art Studio and Artist 2 could well be based on the extra facilities offered, rather than the basic functions, which are equally sophisticated. Artist 2 is cheaper at £14.95 for the 48K version, and £17.95 for the 128K version, and Softek offers a colour screen dump service and disc and microdrive versions. The Advanced Art Studio Ramdisk facility and sophisticated peripheral support are among its best features, while The Artist 2 sprite routine is second to none.

This is one case where the sequels have definitely out-done the originals, and if you haven't yet written your letter to Santa you should make space for one of these packages in your Christmas stocking ◀

The animation station

CHRIS JENKINS ON SOFTCAT'S GRAPHIC DESIGN AND SPRITE ANIMATION PACKAGE FOR THE SPECTRUM

Animator 1 is not a new program, but has been reissued with new packaging, new instructions and several additional routines

It's a very unusual graphics package, approaching the question of screen design and animation in a unique way Don t expect to see any of the icons, pull down menus and mouse controls of other Spectrum packages Animator 1 doesn't even allow you to use a joystick – all the functions are accessed directly from the keyboard, and you'll need the at a glance reference card to keep track of which keys control which functions

Animator 1 is essentially a screen designer, but it has several other options to create sprites, animation routines, text designs and fonts

Design

There are eight main sections to the program, the first is the Design routine This is in many ways a straightforward drawing program, with its own control page where you can choose from five brushes, two airbrushes, a number of textures and any available colour The airbrush and texture designs can be reprogrammed to your requirements, and can also be saved to tape

Line and circle modes are given considerable space in the colourful manual, but are basically straightforward, end points of the centre of circles are set using the cursor keys, and the Spectrum's OVER routine can be used to create special effects

The text mode is interesting, since it treats any text string you enter as a graphic rather than as a line of characters You can stretch the letters either horizontally or vertically, space them out, condense them, add texture washes, invert, and of course apply any of these functions to your own character sets This is one of the most useful features of Animator 1, offering facilities which might be available on other graphics packages, but which would be harder to implement

The next major section is the Scroll/Magnify/Expand routine This allows you to define a zoom window which can be moved around the screen, to expand the whole screen either vertically or horizontally by up to 100 percent, and to scroll either the whole screen, the colour attributes or the pixels in four directions

The sprite design routine is accessed using caps shift and S Until the release of Softek s **Artist 2**, this routine was certainly the most interesting around, it still has many good features, including the ability to define windows of any size in which to design sprites, a storage area in memory to place sprites while you are working on new images, an animation routine to test your series of sprites, and various auto storage functions The catch is that if you want technical information on how to use the sprites you develop in your own games, you have to fork out another £6 95 for the extra manual

Brushes

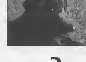
Screens sprites, character sets, user defined characters brushes, airbrushes and textures can all be saved to tape, microdrive or Opus disc, so you can build up a library of graphic items for regular use, or even to swap with other users of the Animator 1 package

Overall Animator 1 is a very unusual package It approaches graphics design in a way which might appeal more to programmers than to budding Michaelangelos but it seems odd to make them have to pay more to get the technical manual It also seems odd to try to make a virtue out of the necessity to use control keys rather than a joystick or other input device to select options It s an absolute pain, and drawing with the Spectrum's cursor keys is no better

Still, if these drawbacks don t put you off, Animator 1 is worth checking out, especially since it comes complete with a copy of the interesting Poster Machine program This allows you to load any pre-designed screens and turn them into banner type posters, converting colours into shading, and printing out on a number of different printer types (primarily those supporting the Kempston interface) Previously sold at £5 95, Poster Machine adds to the impressive abilities of Animator 1 ◀

Program: Animator 1
Price £9 95
Supplier Softcat, PO Box 79, Macclesfield, Cheshire SK10 3NP Tel 0625 615379

CHRIS "IS THERE NO END TO THIS MAN'S TALENTS?" JENKINS ON ARIOLASOFT'S DEGAS ELITE FOR THE ST



Better than Degas?

Degas, from Batteries Included represented a giant leap forward for ST graphics users when it was first released The facilities available easily outdid the well-established **NeoChrome**, but clearly did not exhaust the possibilities of the ST Just to prove it, Ariolasoft is now releasing the follow up, Degas Elite, which adds many sophisticated graphics handling and animation facilities to the already impressive Degas

Although most Degas users will have no difficulty using the new program, there are some substantial differences For a start, at the top of the main menu are a series of drop-down menus which extend the capabilities of the standard painting facilities These – brush, point, line, polygon, box and so on – are still selected from a series of boxes on the main menu

At the top of the screen are the sixteen colours available, each of which can be altered by pulling down the Set menu, selecting Colour, and altering the settings of the three RGB sliders Below are the sixteen available brush shapes, which again can be edited to your requirements using the Make Brush option

The major additions to the program are the provision of multiple workscreens, cut and paste between screens, various rotate, stretch and distort options, and improved animation facilities

One of the best features is Colour Fill Apart from the 36 mono system fills, there are 36 wonderful colour patterns varying from Christmas wrapping paper to eye scorching tartans which can be used with most of the drawing facilities The fills can either be stepped through one at a time on the main menu, or you can double-click on the fill display to bring up the whole selection

You can define your own fills, either in mono or colour, and it's also possible to grab a section of your painting, shift it to the edit fill page, and alter it to your requirements

Another innovation is the Block drawing mode This new tool allows you to define a rectangular shape from your working picture, cut it out, and use it as a form of brush If you drag this brush across the screen, you can produce some stunning 3-D effects as the image "smears" across the screen The block stays available until you select a new one, and can be set to draw off the edge of the screen, or to stay within the boundaries It can be copied to any of the four workscreens available on the 520 (eight on the 1040), and manipulated in a number of novel ways, rotated, stretched horizontally or vertically, skewed, and distorted This involves picking up the corners of the block and dragging them to a new position, then pressing ALT to remap the block onto the new shape Although this is a slow process, the end results are well worth seeing Blocks can be saved to disc in the same way you can save pictures, brushes, fills and so on

Degas Elite can handle many types of picture file, including low, medium and high (mono) Degas files, NeoChrome, Koala Pad pictures from 8 bit Ataris, and even Commodore Amiga IFF Electronic Arts files There's a compression routine which allows you to save a great deal of disc space although some compatible programs require uncompressed files

Also included on the disc are two useful utility programs, a font editor and a slide show routine

Degas Elite is certainly among the most powerful graphics packages available for the ST – but we haven't yet seen a finished version of Mirrorsoft's Art Director Practically all the obvious omissions from the original program have been attended to, and some very original routines, such as the block distort, present possibilities which have not previously been available

Needless to say, in concentrating on the newer facilities of Degas Elite, some of the more obvious ones have been overlooked in this review but the whole spectrum of drawing tools is available

Elite includes many "standard" drawing techniques which encourage experimentation and speed the production of professional-looking results There's a powerful mirror option which allows you to duplicate whatever you draw as a reflection in the horizontal, vertical or diagonal plane, shadow which duplicates what you draw in another colour at a variable distance and direction from your original, outline, which produces some amazing effects by surrounding any given colour with another as you draw and magnify, which uses the function keys to produce a zoom effect from two to ten times You can move the zoom area around on the screen, and close in on it or pull back by using the plus and minus icons

The text option allows you to use several different sizes and styles of text up to 80 characters on a line according to text size and resolution Italic, underline and bold effects are available, and using the shadow option you can easily produce 3-d lettering

Degas Elite also caters for many different working methods

For instance, many of the functions can be called up in three ways, either by clicking on the box on the main menu, or by pressing a key on the keyboard, or by calling up an option from the Set pull down menu This means that even if, for some reason you aren't happy about using the mouse, or about having to use pull down menus, there are still plenty of control options open to you



Only the price, £69 95, is a drawback to what is otherwise a marvellously programmed and unusually user friendly package There are less expensive alternatives – for instance ArtScribe, reviewed elsewhere in this issue – so try to compare before buying You won't be disappointed by Degas Elite if you can justify the expense ◀

Program: Degas Elite **Micro:** Atari 520/1040 ST **Price:** £69 95 **Supplier:** Ariolasoft 68 Long Acre, Covent Garden, London WC2 01-836 3411



Dots with dash

CHRIS JENKINS ON ELECTRIC STUDIO'S VIDED DIGITISERS FDR THE AMSTRAD CPC 6128 AND PCWS

The wide choice of input devices for computer graphics – joysticks, lightpens, tablets, mice and so on – each have their own advantages and disadvantages None of them, though, can give you the detail and sense of reality which can be achieved with a video digitiser

The great advantage of digitising a picture from a video camera or tape is that you do not have to worry about petty problems like perspective, depth of field, scale relationships and so on The best digitisers, like the new Electric Studio device for the Amstrad CPC machines, will allow you to colour the monochrome pictures produced from the video signal, so it's also possible to produce stunning graphic images without having to spend lots of time with the fills, pixel editing and pattern definitions of conventional graphics packages

The C6 and C8 models – for the Amstrad CPC 6128 and PCWs respectively – are physically similar, in that they consist of a small case featuring an edge connector, a disc drive connector, a video input phone socket, and controls to adjust picture brightness and contrast

The software is supplied to disc only, and you'll need a separate disc on which to store your digitised images

The digitising software includes two help pages, which are accessed using the H key These pages list all the functions of the program, although you should soon find that the functions become familiar

The most notable function of the Electric Studio digitiser is the compressed screen mode, which enables the device to produce an almost real-time image from the video signal Some digitisers take so long to 'scan a video picture that they have to operate from a still frame, since many video recorders have imperfect 'freeze' facilities, this can lead to snow and flicker on your image The Electric Studio digitiser grabs a frame in 1/50 of a second, so in compressed mode – displaying a screen image about two inches square – you can watch an almost real-time picture on your computer monitor

Pressing the space bar grabs the current image, which can then be expanded to full size using the F key The image can then be saved to disc in two ways, either as a Screen file, which allows you to produce a print-out or to load the image into a graphics program for manipulation, or as a Data file, which allows you to use the digitiser program to change the colours, screen mode and screen size

The digitiser produces images containing four intensity levels, and you can use the function keys to choose several display options mode Ø, mode 1, mode 2 level A, mode 2 with grey scaling, and so on The numeric keys 1, 2, 3 and 4 can be used to choose any of the Amstrad's available colours for each of the four levels producing stunning visual effects like the psychedelic tiger seen here Colours can also be inverted, or restored to the default values if you become hopelessly mixed up

Just producing a digitised picture, as some devices allow you to do, is pretty limiting What's so good about the Electric Studio package is that it comes complete with a built-in Professional Mk 2 Light Pen and graphics program, allowing you to load your saved digitised images from disc into the graphics program for enhancement and manipulation

The graphics program features all the functions you would expect, square, box, triangle, fill, unfill, block copy, zoom, spray gun, circle, line, pen, text entry, mirror, and even a sprite definition routine Your working screen can even be stored in the 6128's memory, and either recalled at a later date, or merged with a new working screen The possibilities of combining video images with text and your own graphic designs are virtually limitless

The Amstrad PCW version of this digitiser/lightpen system is substantially the same, although, of course, there are no colour facilities The PCW version can be used with the ESP lightpen and mouse, which cost £79 95 and £129 95 respectively

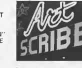
Although the graphics abilities of the Amstrad CPC's have been well catered for in the past, the Electric Studio digitiser takes the possibilities to new heights The PCW version, meanwhile, demonstrates that this machine has capebilities the designers would not have imagined

Once again, Electric Studio has delivered high quality and sophistication at reasonable prices ◀

Product: Electric Studio Video Digitiser C6 (CPC 6128) and C8 (PCW 8256/8512)
Price: £99 95
Supplier: Electric Studio, 13 The Business Centre, Avenue One, Letchworth, Herts SG6 2HB Tel 0462 675666

Power without price

IF £70 FOR DEGAS IS TOO STEEP, CHECK OUT MAGISTER's £25 ALTERNATIVE CHRIS "IT'S THAT MAN AGAIN" JENKINS PREVIEWS THE LATEST ATARI ST GRAPHICS PROGRAM



Magister Software is a new company specialising in 68000 programming, and its first scheduled product, **ArtScribe**, looks like having a considerable impact on the Atari ST graphics market.

Up until now the field has been dominated by Atari's own **NoeChrome** limited, but benefitting from being bundled with most of the STs sold so far – and **Degas**, from Batteries Included via Ariolasoft This much more powerful package has now been superceded by **Degas Elite** (reviewed elsewhere in this issue) but retails at around the £70 mark

Magister's ArtScribe includes most of the features of these two packages, and can indeed use files created with either However, it's planned to sell ArtScribe at £24 95, and with the prospect of NeoChrome no longer being bundled with STS, ArtScribe may well become the first choice graphics package for many users

ArtScribe has many facilities intended to make it easy to use, while including some complex functions which suit it for professional applications It also operates in all three ST screen modes, low, medium and hi res

The ArtScribe programmers have opted to follow the example of Degas rather than NeoChrome, in having the full drawing screen displayed without the distraction of any menus or icons Although it can be useful to have some icons displayed on the screen for quick selection, NeoChrome style, there is some virtue in having a clear screen, and calling up options separately

Double-clicking calls up the main menu, which contains text descriptions of the available options in the familiar rectangular boxes Submenus appear when you select an option from the main menu

To return to the picture, you click outside the menu box

On loading, the background is set to black, and the sixteen colours available in low resolution are displayed along the top of the main menu You can alter any of these by using a set of RGB sliders on the Palette sub-menu

All the expected drawing tools are available The Brush section features sixteen brush shapes, you can also define your own shapes using a grid arrangement, and if you wish save brush shapes to disc On which subject, you should always use a library disc rather than storing graphics on the program disc, each library disc can hold up to eleven complete pictures

Having selected a brush shape, that shape will be used for all drawing functions until you deselect it This allows you, for instance, to draw a circle using a wide brush, and so produce a three-d effect

The Shapes sub-menu deals with drawing circles, polygons, lines, boxes and frames The polygon function is particularly powerful, allowing you to set the central point of a polygon of up to eighteen sides, expand it to the required size, and then, using the rotate option, turn it to any angle required

The fill function allows you a choice of 36 predefined single-colour fill patterns, including a solid fill There are also 36 user definable multi colour fills available, this useful option wasn't fully implemented on the demo copy, resulting in all 36 fills looking like an explosion in a pizza factory However, the possibilities are obviously limitless, and who knows, one day you may need to draw an explosion in a pizza factory!



The airbrush function builds up a pattern gradually and has three speeds and densities, as well as solid or pattern options

The text option is fairly powerful, allowing you to enter text from the keyboard, and select bold, italic, underline, outline and other options before placing it in position on the screen It s also possible to invert the text or place it vertically rather than horizontally Six text sizes are available

The magnify mode is very powerful, enabling you to perform pixel editing at a number of different zoom settings It's also possible to step through the magnifications, progressively zooming closer and closer until the picture becomes a sea of dots! Also included is the ability to flip chunks of the picture horizontally or vertically

One of the best features of ArtScribe is Grab Fill, which allows you to outline a section of the screen, and use it as a fill pattern Since fill patterns can also be used with the airbrush, draw and many other functions, this allows you to produce some stunning effects

Since up to six pictures can be stored in memory at once, and you can use the cut and paste facility to cut chunks out of them and transfer them to other pictures, the possibilities are limitless, the final version of ArtScribe will include a wide choice of transparent, XOR and AND modes so that with careful use of all kinds of merging effects can be achieved For serious graphic designers this should be very useful, while for dabblers it should allow you to create fascinating pseudo random effects

At this price and with the facilities promised in the final version, it is going to be hard to ignore ArtScribe ◀

Program: ArtScribe Art and Design **Micro** Atari 520 ST **Price** £24 95 **Supplier** Magister Software, contact SPL Distribution, PO Box 8, Hampton, Middlesex TW12 3XA 01 979 2987



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Amstrad Disc £13.95
MIKRO-GEN
Unit 15 The Western Centre Western Road Bracknell Berks.

Toolkit

Lermineau Rudy

This program adds 21 new commands to Commodore *Basic*. The new commands must be preceded by the sign @ or a syntax error message will be given. As this is going to be a three week effort the descriptions of the commands will be split over that period.

Num start increment renumbers program listings

Old restores a program after you have typed New

Auto increment gives automatic line numbering

Stop cancels the above facility

Tron produces a small window containing the five most recent line numbers executed when a program is running

Trof turns the tracing off

Hex $x returns the decimal equivalent of x

Hex x returns the hexadecimal equivalent of x

Del start, end increment (max 255) deletes blocks of Basic lines

```
0 REM ************************   BY
1 REM ** RUBY'S TOOLKIT ** LERMINEAU
2 REM ************************   RUBY
3 M=49152
4 FORD=1TO12
5 READA:T=T+A:POKEM,A:M=M+1
6 NEXTD
7 READA:IFA=TTHEN9
8 PRINT"DATA ERROR IN LINE ";20+L:END
9 T=0:L=L+1:IFL=239THEN11
10 GOTO4
11 PRINT"ALL DATA OK":PRINT"TYPE 'SYS49152' "
12 PRINT"TO ACTIVATE RUBY'S TOOLKIT":END
20 DATA 76,80 204,32 43 39 82 85 84 89 82 78 972
21 DATA 39,0 32,21 192 32 73 192 44 32,51 192 900
22 DATA 201 33 240 7 201 64 208 18 76 80 192 32 1352
23 DATA 73 192 32 51 192 141 20 192 32 57 196 32,1210
24 DATA 73,192 96 169 122,141,70,192,169 123,141 71,1551
25 DATA 192 238 70 192 208 3,238 71,192 173 200,0,1793
26 DATA 30 230,122 208,2 230,123 96 32 73 192 32 1436
27 DATA 51 192 141 20 192 160 0 185 107 200 240 35,1520
28 DATA 205 20 192 208 13 200 32 73 192 32 51 192,1410
29 DATA 141 20 192 24 144 233 200 200 200 200 200 200,1954
30 DATA 200 185 107 205 201,160 208 219 76,0 175,32 1776
31 DATA 73 192 200 185 107 205 141 149 192,200 185 107 1936
32 DATA 205 141,190 192 76 65 195 169 147 32 210 255 1837
33 DATA 169 237 160 201 32 30 171 169 6 160 205,32,1572
34 DATA 30 171,169 228 160 206 32 30 171 32 215 170 1604
35 DATA 160 0 162 0 232 185 107 205 240 10 201 160 1682
36 DATA 240 20 32 210 255 200 208 240 224 5 240 6 1888
37 DATA 169 32 32 210 255 200,162 0 200 200 200 169 1829
38 DATA 32 32 210 255,208 210,32 215 170 32 215 170 1789
39 DATA 160 234 160 204 32 30 171 76 116 164 169 237 1762
40 DATA 141 40 3 169 248 141 41 3 76 116,164 162 1302
41 DATA 0 169 160 157,192 2 232 224,25 208 248,169 1706
42 DATA 20 141 40 3 169 193 141 41,3 169 1 141 1067
43 DATA 204 2,76 116,160 0 72,152 72 130,72 162,1200
44 DATA 0 169 7,157 0 216 157 40,216 157 80 216 1415
45 DATA 157 120 216 157 160,216,232 224 5,208 236 165 2096
46 DATA 251 197 57 208 6 165 252 197 58 240 76 165 1872
47 DATA 57,133 251 165 58 133 252,162 0 189 192,2 1599
48 DATA 157 192 2 189 202 2 157 197,2 189 207 2,1490
49 DATA 157 202 2 189,212 2 157,207,2,169,160 157 1616
50 DATA 212 2 232 224,5 208 222,160 57 165,90 134,1685
51 DATA 99 133 90 162 144 56 32 73 190 32 221 189 1427
52 DATA 162 0 169 1 1,240 0 3,120 157 212,2 1195
53 DATA 232 208,243 162 0 189 192 2 157 0 4,189 1578
54 DATA 197 2 157 40 4 189 202 2 157,80 4 189 1223
55 DATA 207 2 157 120 4 189,212 2 157 160 4 232 1448
56 DATA 224 5 208 221 172 254 2 174 254 2 302 208 1926
57 DATA 253 136,208 247 104 170 104 150 104 40,76,237,1647
58 DATA 246 162 4 232 180 0,0 208 250 232 142 1 1674
59 DATA 0 169 0 150,141 2 0 130 208 33 152 200,1243
60 DATA 30 160,0 230 251 240 40 200 192,2,200,247 1800
61 DATA 165 251 133 45 133 47 133 49 165 252 133 46 1552
62 DATA 133 48 133 50 76 116 164 134,251 132 252 160 1549
63 DATA 0 177 251 170 200 177 251 160 76 219 193 230 2112
64 DATA 252 208,215 160,0 141 20 182,32 65,240 176,1718
65 DATA 23 150 0 177 170 201,5 240,15,201 1,240 1441
66 DATA 0 201 3 248 4 201 4 208 231 76 69 194 1439
67 DATA 162,30 76,55,164,177,178,133 99,200,177,178,1629
```

```
68 DATA 133 98 76 205 199 230,20 132,174 20 132 169,1718
69 DATA 0 32 202 199,169 41 32,210 255,169 32 32 1365
70 DATA 210,255 160 5 177 170 201 32 208 2 169 46 1643
71 DATA 32 210 255 200 192 21 208 240 160 1,32 57 1608
72 DATA 194 169 32 32 210 255,169 45 32 210 255 169 1772
73 DATA 32,32 210 255 160,3 32 57 194 169 13 32 1189
74 DATA 210 255 32 159 255,32 228,255,201 0 240 246 2189
75 DATA 201 69 208 129 30 120 169 49 141 20 3 169 1373
76 DATA 204 141 21 3 80 76,116 164,120 169 149 141 1422
77 DATA 20 3 169,198 141 21 3 88,76 116 164 32 1029
78 DATA 253 174,32 130 173 32 247 183 165 20 141 160 1710
79 DATA 200 165 21 141 161 200,169 228,141 4 3 169 1602
80 DATA 194 141,5 3 76,116 164 169 124 141 4,3 1140
81 DATA 169 165 141,5,3 76 116,164 173 0 2 201 1215
82 DATA 48 144 19 201 58 176,6 104 1 133 2 208 1154
83 DATA 4 169 0 133 2,32 124 165 165,2 208 1 1005
84 DATA 96 182 5 208 1 98,173 160 208 24 101 20 1276
85 DATA 170 173 161 208 101,21 134 99,133 98 162 144 1596
86 DATA 56 132 72 32 73 160 32,223 189 139 251 132 1533
87 DATA 252 160 0 177 251 240 6 153 110 2 200 208 1750
88 DATA 246,200 169 32 153 110 2 132 198,194 168 96 1619
89 DATA 0 137 130 141 167,32 115,0 201 30 208 42 1217
90 DATA 32,87 195 72 32 87 195 170 104 32 205 189 1480
91 DATA 76 116 164 32 102 195 10 10 10 10 133 35 893
92 DATA 32 102 195 101 35 96 32 115 0 201 58 41 1000
93 DATA 15 144,2 104 0 96 32 138 173 32 247 183 1175
94 DATA 170 152 72,72 120 72,72 169 36 42 210 255 1450
95 DATA 104 32 151 195 104,32 156 195 104 32 151 195 1451
96 DATA 104 32 156 195 76 116 164 24 106 106 108 106 1291
97 DATA 41 15 24 105 48 201,58 144 2 105 6,32 701
98 DATA 210 255 80 32 253 174 32 158 173 32 247 183 1845
99 DATA 133 252 132 201 32 253 174 32 158 173 32 247 1869
100 DATA 183 133 254 132 253 32 253 174 42 158 173,32 1809
101 DATA 247 183 165 20,133 250 165 220 141 132 205 169 2034
102 DATA 195 141 133 205 169 147 32 210 205 165 251 197 2100
103 DATA 253 208,0 165 252 197 254 240 62 176 54,160 2036
104 DATA 251 165 252 32 205,189 32,215 170 169 215 160 2055
105 DATA 204 32 30 171 24 165 251 101 250 133 201 165 1777
106 DATA 252 105 0 133 252 169 19,141 119 2 162 0 1354
107 DATA 169 13 157 120 2 232 224 9 208 248 169 5,1590
108 DATA 133,190 32 131 164 169 106 160 204 32,30,171 1618
109 DATA 169,171 141 132 205 169 195 141 133 205 76 116 1853
110 DATA 164 169 206 141 142 196,173 20 192 56 233 49 1741
111 DATA 141 20 192,162,0 41 3 240 12 162 64 74,1111
112 DATA 240 7 162 192 100 48 2 162 128 142 141,196 1526
113 DATA 173 20 192 201 4 48 3 228 142 196 162,0,1379
114 DATA 32 78 192 32,73 192 32 73 192 32 51 192 1166
115 DATA 201 210 208,2,169 13 201 93 240 0 32,148 1517
116 DATA 196 232 224 63,208 232 160 0 32 148 196 96 1700
117 DATA 157 0 0 96 6,0 2 4,0 0 165 197 625
118 DATA 208 168 196 208 3 76 2 197 201 3 16 0,1263
119 DATA 160 0 141 148 196 76,2 197 201,7 16 244,1397
120 DATA 141 148 196 56 235 3 170 189 144 196 24 109,1609
121 DATA 141,2 72 182 0 41,3,240 12 162 64 74 873
122 DATA 240 7 162 192 196,48 2 162 128 142 229 196 1613
123 DATA 169 206,141 229 196 104 201 4 48 3 236 229 1756
124 DATA 196 150 0 109,0 0 201 0 240 24 201 13 1228
125 DATA 240 24 132 254,174 134 2 41 191 32 19 234 1477
126 DATA 32,182,230 164,254 200 192 63 200 225 40 76 1066
127 DATA 49 234,141 119 2 169 1,133 198 80 76 49 1211
```


Text Editor

Derek Paterson

This program is a full screen text editor which supports up to 1200 lines of text, each line being 32 characters in length. As the program is very easy to use all that remains is to list the command keys

CP stands for *Caps Shift* and *SM* for *Symbol Shift*
CP + 1 moves cursor down 20 lines
CP + 2 moves cursor up 20 lines
CP + 3 moves down 100 lines
CP + 4 moves up 100 lines
CP + 5 is cursor left
CP + 6 is cursor down
CP + 7 is cursor up
CP + 8 is cursor right
CP + 9 is cursor home
CP + 10 is the usual Spectrum Delete
CP + SM sets the tabulate function
SM + I inserts a space
SM + D deletes and closes
SM + E erases to the end of the line
SM + S saves text to tape
SM + A loads text
SM + U sets upper case
SM + Y returns to lower case
SM + F Lprints out the text
SM + G moves to line 1
SM + W initiates the block move/copy function

When you intend to use move/copy position the cursor at the start of the block and press *Sm + W*. You are then prompted to set the end of the block. When the cursor is in position again (don't move it for processing just one line) press *Enter*. Then move the cursor to the new position where the block is to be moved to.

At this stage you will be asked whether you wish to move (M) or copy (C) the block.

```
  10 LET ad=26400: LET i=1: LET o=0: LET p=o: LET b=21: LET l=1200: LET ll=32: DIM w$(l,ll)
  20 LET x=i: LET y=i: LET sp=i: LET st=30: LET ps=40: LET pl=50: LET pc=60: LET lo=100: LET ch=600
  30 BORDER i: PAPER i: INK 6: CLS : GO SUB ps: GO TO lo
  40 IF p<o THEN LET p=o
  41 IF p>l-b THEN LET p=l-b
  45 FOR f=i TO b: PRINT AT f-i,o;w$(p+f): NEXT f
  50 PRINT AT x-i,o;w$(p+x)
  60 PRINT AT b,o;"Lines ";p+x;"          ";AT x-i,y-i; OVER i;" ": RETURN
 100 LET i$=INKEY$: LET c=CODE i$: IF c<16 THEN GO SUB 200: GO TO lo
 110 IF c>122 THEN GO TO 300+c
 120 LET w$(p+x,y)=i$: BEEP .01,b: IF i$=" " THEN LET sp=y
 130 PRINT AT x-i,y-i;i$: LET y=y+i: IF y<ll+i THEN GO SUB pc: GO TO lo
 140 IF p+x=l THEN BEEP .1,o: LET y=i: GO SUB pc: GO TO lo
 150 IF i$=" " THEN LET y=i: GO TO 180
 160 LET w$(p+x+i,i TO )=w$(p+x,sp+i TO ): LET w$(p+x,sp TO )="": PRINT AT x-i,o;w$(p+x)
 170 LET y=ll-sp+i
 180 IF x<b THEN LET x=x+i: GO SUB pl: GO TO lo
 190 LET p=p+i: GO SUB ps: GO TO lo
 200 IF c<4 THEN RETURN
 210 GO TO 200+(c*10)
 240 LET p=p+100: GO SUB ps: RETURN
 250 LET p=p-100: GO SUB ps: RETURN
 255 GO SUB ps: RETURN
 260 LET p=p-(b-i): GO SUB ps: RETURN
 270 LET p=p+(b-i): GO SUB ps: RETURN
 280 IF y>i THEN GO SUB pc: LET y=y-i: GO SUB pc: RETURN
 281 IF y=i AND x>i THEN GO SUB pc: LET x=x-i: LET y=ll: GO SUB pc
 285 RETURN
 290 IF y<ll THEN GO SUB pc: LET y=y+i: GO SUB pc: RETURN
 291 IF y=ll AND x<b THEN GO SUB pc: LET x=x+i: LET y=i: GO SUB pc
 295 RETURN
 300 IF x=b THEN LET p=p+i: GO SUB ps: RETURN
 301 GO SUB pc: LET x=x+i: GO SUB pc: RETURN
 310 IF x=i THEN LET p=p-i: GO SUB ps: RETURN
 311 GO SUB pc: LET x=x-i: GO SUB pc: RETURN
 320 LET w$(p+x,y)=" ": IF y>i THEN LET y=y-i
 325 GO SUB pl: RETURN
 330 IF x<b THEN GO SUB pc: LET x=x+i: LET y=i: GO SUB pl: RETURN
 331 GO SUB pc: LET p=p+i: LET y=i: GO SUB ps
 335 RETURN
 340 GO SUB pc: IF y<5 THEN LET y=5: GO SUB pc: RETURN
 341 IF y<15 THEN LET y=15: GO SUB pc: RETURN
 342 IF y<25 THEN LET y=25: GO SUB pc: RETURN
 345 LET y=i: GO SUB pc: RETURN
 350 GO SUB pc: LET x=i: LET y=i: GO SUB pc: RETURN
 472 LET w$(p+x,y TO )=" "+w$(p+x,y TO ): GO SUB pl: GO TO lo
 495 GO TO 900
 497 BEEP .2,b: POKE 23658,8: GO TO lo
 498 BEEP .2,b: POKE 23658,4: GO TO lo
 499 GO TO 950
 500 LET w$(p+x,y TO )="": GO SUB pl: GO TO lo
 501 GO TO 700
 503 LET p=o: GO TO st
 504 GO TO 510
 505 LET w$(p+x,y TO )=w$(p+x,y+i TO )+" ": GO SUB pl: GO TO lo
 510 LET c$=" LPRINT ": GO SUB ch: IF ok=i THEN FOR f=i TO l: LPRINT "    ";w$(f): NEXT f
 511 GO TO st
 526 GO TO 930
 600 CLS : PRINT "        ";c$'"Press Y to confirm choice"'"Press N to return to Editor"
 610 LET i$=INKEY$: IF i$="" THEN GO TO 610
 620 IF i$="y" OR i$="Y" THEN LET ok=i: RETURN
 630 IF i$="n" OR i$="N" THEN LET ok=o: RETURN
 640 GO TO 600
 700 BEEP .05,11: LET lb=o: LET ox=p+x: LET a$="Define Line/Block": GO SUB 800: LET nx=p+x: IF nx<ox THEN BEEP .1,i: BEEP .1,o: GO TO st
 710 LET xx=nx-ox: LET a$="Define new position & ENTER": GO SUB 800: GO SUB 850: FOR f=o TO xx: LET w$(p+x+f)=w$(ox+f): IF cm=2 THEN LET w$(ox+f)=""
 720 NEXT f: GO TO st
 800 BEEP .05,b: PRINT AT b,o; INVERSE i;a$
 810 LET i$=INKEY$: LET c=CODE i$: IF c=o THEN GO TO 810
 820 IF c>5 AND c<12 THEN GO SUB 200+(c*10)
 830 IF c=13 THEN RETURN
 840 GO TO 810
 850 BEEP .05,x: LET cm=o: PRINT AT b,o; INVERSE i;"  C=Copy M=Move  "
 860 LET i$=INKEY$: IF i$="c" OR i$="C" THEN LET cm=i
 870 IF i$="m" OR i$="M" THEN LET cm=2
 880 IF cm=o THEN GO TO 860
 890 RETURN
 900 LET c$="SAVE TEXT": GO SUB ch: IF ok=o THEN GO TO st
 910 INPUT "FILE NAME? ";n$: IF LEN n$<i THEN LET n$="L3TEXT"
 920 INPUT "Save to Line..? ";sl: SAVE n$ CODE ad,ll*sl: GO TO st
 930 LET c$="RESTORE TEXT": GO SUB ch: IF ok=o THEN GO TO st
 940 LOAD "" CODE ad: GO TO st
 950 LET c$="QUIT": GO SUB ch: IF ok=i THEN RUN
 960 GO TO st
```

Khandal

Ian Grainger

Khandal is an arcade adventure game in the tradition of Knight Tyme featuring icon selected functions, continuous music, sprites and puzzles. The bad news is, and brace yourselves now, that this is a four week listing. Well it'll give you something to do over Christmas won't it? If the thought of all the typing is too daunting you can send £3 to Ian Grainger, 33 Wellfield Road, Wingate, Co Durham, Cleveland. Game plot and more details follow in the weeks ahead.

```
10 REM Khandal
20 REM Written by Ian Grainger
30 REM Copyright 1986
40 :
50 SYMBOL AFTER 180:MEMORY &5FFF:LOAD "data"
60 GOSUB 1270
70 GOSUB 2620
80 GOSUB 840
90 GOSUB 1170
100 GOSUB 1950
110 GOSUB 2120
120 GOSUB 2060
130 GOSUB 2220
140 GOSUB 1430
150 icon=1:i=1:GOSUB 1090
160 exit=0:str=str-1
170 IF MID$(ro$(room),2,1)="1" THEN GOSUB 2550
180 IF MID$(ro$(room),3,1)="1" THEN GOSUB 2550:GOSUB 2590
190 left=VAL(MID$(ro$(room),1,1)):right=VAL(MID$(ro$(room),4,1))
200 door=VAL(MID$(ro$(room),2,2))
210 f=rm(room):IF f>0 THEN 230
220 GOTO 250
230 IF f<6 THEN chs=200 ELSE chs=(f-6)*4+204
240 i=3:xo=24:yo=16:GOSUB 1520
250 REM Hello, are you enjoying all of the typing'
260 s1=scr:l1=4:h1=31:d1=da
270 r1=room:GOSUB 780
280 IF yes=1 THEN yes=0:GOSUB 550
290 scr=s1:le=l1:he=h1:da=d1
300 GOSUB 550
310 REM Main routine
320 WHILE INKEY(47)+INKEY(71)+INKEY(63)+INKEY(31)+INKEY(29)+INKEY(18)=-6:GOSUB 860:WEND
330 GOSUB 860
340 IF INKEY(71)<>-1 AND face=-1 THEN GOSUB 610:GOSUB 640
350 IF INKEY(63)<>-1 AND face=1 THEN GOSUB 610:GOSUB 710
360 IF INKEY(71)<>-1 AND face=1 THEN face=-1:GOSUB 610:da=&6000:GOSUB 550
370 IF INKEY(63)<>-1 AND face=-1 THEN face=1:GOSUB 610:da=&6100:GOSUB 550
380 IF INKEY(29)<>-1 THEN i=3:GOSUB 1090:icon=icon+1:i=1:GOSUB 1090
390 IF INKEY(31)<>-1 THEN i=3:GOSUB 1090:icon=icon-1:i=1:GOSUB 1090
400 IF INKEY(18)<>-1 AND door>0 AND scr>&D431 AND scr<&D438 THEN GOSUB 860:GOSUB 2290
410 IF INKEY(47)<>-1 AND icon=1 THEN GOSUB 1660
420 IF INKEY(47)<>-1 AND icon=2 THEN GOSUB 1550
430 IF INKEY(47)<>-1 AND icon=3 THEN GOSUB 1760
440 IF INKEY(47)<>-1 AND icon=4 THEN GOSUB 1830
450 IF INKEY(47)<>-1 AND icon=5 THEN GOSUB 1860
460 IF INKEY(47)<>-1 AND icon=6 THEN GOSUB 2350
470 IF str<60 THEN dead=1:CLS#2:PRINT#2,"You fall to the ground gasping for air, exhaustion hits you hard, and you die'"
480 IF dead=1 AND room=24 AND obj=0 THEN PRINT#2,"You scored";str
490 IF dead=1 THEN dead=0:PRINT#2,"Press Space.":WHILE INKEY(47)=-1:GOSUB 860:WEND:GOSUB 1340:GOTO 100
500 IF exit=1 THEN GOSUB 860:GOSUB 610:scr=scr1:GOSUB 780
510 IF yes=1 THEN yes=0:GOSUB 610:scr=s1:le=l1:he=h1:da=d1
520 IF exit=1 THEN CLS#1:GOTO 160
530 GOTO 310
540 END
550 REM Print Sprite
560 POKE &803D,&7E:POKE &803F,&12
570 CALL &8000,scr,le,he,&7000
580 POKE &803D,&1A:POKE &803F,&77
590 CALL &8000,scr,le,he,da
600 RETURN
610 REM Remove Sprite
620 CALL &8000,scr,le,he,&7000
630 RETURN
640 REM Move left
650 scr=scr-2
660 IF scr=&D422 AND left=0 THEN scr=scr+2
670 IF scr=&D422 AND left=1 THEN exit=1:r1=room:room=room-1:scr1=&D446
680 IF da=&6080 THEN da=&6000:GOSUB 550:GOTO 700
690 IF da=&6000 THEN da=&6080:GOSUB 550
700 RETURN
710 REM Move Right
720 scr=scr+2
730 IF scr=&D448 AND right=0 THEN scr=scr-2
740 IF scr=&D448 AND right=1 THEN exit=1:r1=room:room=room+1:scr1=&D426
750 IF da=&6180 THEN da=&6100:GOSUB 550:GOTO 770
760 IF da=&6100 THEN da=&6180:GOSUB 550
770 RETURN
780 REM Character print
790 IF c(1,1)=r1 THEN s1=scr:l1=le:h1=he:d1=da:scr=&D429:le=5:he=31:da=&6200:yes=1
800 IF c(1,2)=r1 THEN s1=scr:l1=le:h1=he:d1=da:scr=&D433:le=5:he=31:da=&6300:yes=1
810 IF c(1,3)=r1 THEN s1=scr:l1=le:h1=he:d1=da:scr=&D435:le=5:he=31:da=&6300:yes=1
820 RETURN
830 REM Get notes
840 RESTORE 2620:DIM tune(300):FOR f=1 TO 281:READ tune(f):NEXT
850 RETURN
860 pitch=tune(note):IF pitch>2 THEN pitch=pitch/2
870 IF pitch>2 THEN SOUND 17,pitch,20,0,5:SOUND 10,pitch*2,20,0,5
880 IF beat=0 THEN GOTO 910
890 IF (pitch>2 AND (note/2<>INT(note/2))) AND ((note>24 AND note<33) OR note>56)) THEN SOUND 4,270,20,0,1,2,2:SOUND 4,
```

Programming: Amstrad CPC

```
270,10,0,1,2,2:SOUND 4,270,10,0,1,2,2
900 IF note<25 OR (note>32 AND note<57) OR pitch<3 THEN SOUND 4,0,20,0
910 IF pitch=0 THEN p1=160:p2=2:p3=1:p4=13:d=20
920 IF pitch=1 THEN p1=0:p2=0:p3=0:p4=0:d=20
930 IF pitch=2 THEN p1=80:p2=1:p3=0:p4=10:d=20
940 IF pitch=-1 THEN p1=0:p2=4:p3=0:p4=1:d=20
950 IF pitch=-2 THEN p1=270:p2=1:p3=2:p4=2:d=10
960 IF pitch=-3 THEN p1=340:p2=1:p3=2:p4=6:d=10
970 IF pitch=-4 THEN p1=390:p2=1:p3=2:p4=15:d=10
980 IF pitch=-5 THEN p1=440:p2=1:p3=2:p4=20:d=10
990 loop=1:IF d=10 THEN loop=2
1000 IF pitch<3 THEN FOR x=1 TO loop:SOUND 3,p1,d,0,p2,p3,p4:NEXT
1010 note=note+1:IF note=281 THEN note=9
1020 RETURN
1030 REM Draw icon window
1040 ix=co(1,icon):iy=co(2,icon)
1050 RESTORE 2890:PLOT ix,iy,a1:FOR f=1 TO 20:READ a,b
1060 IF a=1000 THEN a=b:READ b:PLOT ix+8,iy-8
1070 DRAWR a,b:NEXT:RETURN
1080 RETURN
1090 REM Icon highlights
1100 IF icon=7 THEN icon=1
1110 IF icon=0 THEN icon=6:IF obj=0 THEN icon=5
1120 IF obj=0 AND icon=6 THEN icon=1
1130 xo=p1(1,icon):yo=p1(2,icon):chs=p1(3,icon)
1140 IF icon=6 THEN chs=(obj-6)*4+204:IF obj<6 THEN chs=200
1150 GOSUB 1520
1155 GOSUB 860
1160 RETURN
1170 REM Machine code loader
1180 RESTORE 2930:add=&8000:l1=&0300
1190 FOR f=1 TO 12:READ a$:c=0
1200 FOR n=1 TO LEN(a$) STEP 2
```

Programming: BBC

Hurles

Mark Ward

Hurles is a game for 1–4 players where the object of the game is to throw your ball on the playing court as near to the 10 feet line as possible scoring the maximum number of points Each player has three balls per round at the end of which the total scores are compared Game points are awarded in order of merit and the game lasts for three rounds the winner being the player who has scored the most game points

The distance the ball travels is affected by the force (F), the elevation (E) at which it s thrown and the spin (S) given The distance is also affected by the mass (M) of the ball, selected by the umpire, and the type (player selectable)

If the ball rebounds further than the starting point then that shot is deemed a foul

More details and the rest of the listing in the next issue

Listing 1

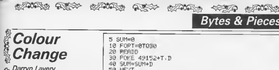
```
40VDU23,224,255,255,255,255,255,255,255,255
50VDU23,225,126,126,126,126,126,126,126,126
60VDU23,226,255,0,0,0,0,0,0,0
70VDU23,227,0,0,0,7,2,2,2,2
80VDU23,228,0,0,0,7,5,7,5,7
90VDU23,229,0,0,0,5,5,7,5,5
100VDU23,230,0,0,0,7,4,6,4,7
110VDU23,231,0,0,0,2,2,2,2,2
120VDU23,232,0,0,0,7,4,5,5,7
130VDU23,233,0,0,6,15,15,15,15,15
140VDU23,234,224,96,112,112,56,56,28,15
150VDU23,235,31,31,15,15,7,7,3,0
160VDU23,236,0,0,0,1,3,3,7,255
170VDU23,237,255,255,255,254,252,252,248,0
180VDU23,238,240,240,240,224,224,192,128,0
190VDU23,239,238,252,248,248,240,240,224,224
200VDU23,240,0,0,0,0,0,8,28,30
210VDU23,241,1,3,4,4,15,6,3,1
220VDU23,242,0,0,2,2,0,0,0,0
230VDU23,243,14,7,3,3,1,1,0,0
240VDU23,244,0,0,0,0,0,0,3,175
250VDU23,245,240,248,204,204,254,222,252,80
260VDU23,246,0,0,16,16,0,0,0,0
270VDU23,247,240,112,176,176,240,208,240,240
280VDU23,248,24,60,60,126,66,60,60,24
290VDU23,249,0,0,64,192,240,240,251,247
300VDU23,250,40,120,120,56,56,8,0,0
310VDU23,251,0,0,0,0,0,240,248,188
320VDU23,252,24,36,24,126,126,24,36,24
330VDU23,253,160,240,240,224,128,0,0,0
340VDU23,254,0,0,0,16,112,240,240,240
350CHAIN"HURLES2"
```

```
10REM          HURLES2
20ONERRORGOTO80
30DIMsc%(4):DIMpts%(4):DIMPT%(4):DIMpos%(4):DIMpos$(4):DIMplayer$(4)
40F%=0:S%=5:E%=0:count%=0:sec=0.1:M%=0:@%=1
50MODE7:VDU23;8202;0;0;0;:PROCcontrols
60CLS:PROCplayers
70CLS:PROCball
80MODE7:VDU23;8202;0;0;0;:PROCmenu:CLS
90ONmenu%GOSUB110,120,130,140
100GOTO80
110PROCcontrols:RETURN
120PROCplayers:RETURN
130PROCball:RETURN
140FORI%=1TOnplyr%:sc%(I%)=0:NEXT:G%=1
150FORround%=G%TOG%+2
160FORI%=1TOnplyr%:pts%(I%)=0:NEXT:h=50:F%=0:E%=0:S%=5
170MODE2:PROCdraw
180FORgo%=1TO3
190FORplyr%=1TOnplyr%
200M%=RND(10):PROCind(M%,175,550)
210PROCgo
220NEXT:NEXT
```

Listing 2

```
230FORM=1TO8000:NEXT
240MODE7:PROCscore
250NEXTround%
260PROCwin
270IFG$="C"S%=G%+3:GOTO150
280IFG$="R"GOTO80
290END
300DEFPROCgo
310VDU19,plyr%+7,12,0,0,0
320F%=0:E%=0:S%=5:throw2=-10:foul%=0:bounce%=0
330PROCind(F%,50,100):PROCind(E%,50,550):PROCind(S%,175,100)
340*FX15,0
350IFplayer$(plyr%)="The Champ"PROCauto
360REPEAT
370I$=GET$
380IF I$="F" F%=FNcontrol(F%,50,100,110)
390IF I$="S" S%=FNcontrol(S%,175,100,150)
400IF I$="E" E%=FNcontrol(E%,50,550,50)
410IF I$="Q" Q%=(Q%+1)MOD2
420UNTIL I$="H"
430M%=252:xcoeff=COS(RAD(70*E%/10)):ycoeff=SIN(RAD(70*E%/10))
440accel=(F%*55/M%)+50+RND(10)
450xvel=(xcoeff*accel)*sec:yvel=(ycoeff*accel)*sec
460xdist=xvel*sec:ydist=yvel*sec:IFydist<=0yvel=(-ball*yvel):ydist=0
470REPEAT
480PROCcalc
490MOVE367,throw:VDUR%:R%=R%-(0R%-250)*2):IFfoul%=0MOVE367,throw2:VDUR%
500FORM=1TO100:NEXT
510UNTILxvel<0.1ANDxvel>-0.1ANDydist<0.02ANDydist>-0.02
520PROCdisplay
530FORM=1TO1000:NEXT
540IFfoul%=0GCOL3,3:MOVE367,throw2:VDUR%
550VDU19,plyr%+7,1,0,0,0
560ENDPROC
570DEFPROCcalc
580xvel=xvel-(0.7*xvel*sec):yvel=yvel-(9.8)*sec:xdist=xdist+(xvel*sec):ydist=ydist+(yvel*sec)
590IFxdist>=10.2xvel=(-ball*xvel):xdist=10.2:IFbounce%<>1bounce%=1:SOUND1,(-15*Q%),5,1
600IFydist<=0yvel=(-ball*yvel)-(0.2*yvel):ydist=0:xvel=((0.8*xvel)+(0.4*(S%-5))):S%=5:SOUND1,-15*Q%,10,1
610IFxdist<0xdist=0
620GCOL3,3:throw=throw2:throw2=180.02*xdist)+50:MOVE600,hi:DRAW700,hi
630IFthrow2<130ANDbounce%<>0PROCfoul:GOTO660
640hi=50+(150*LN((ydist)+1)):IFhi>430hi=430
650MOVE600,hi:DRAW700,hi
660ENDPROC
670DEFFNcontrol(a%,b%,c%,s%)
680a%=a%+1:IFa%=1la%=0
690SOUND2,-15*Q%,s%,2
700PROCind(a%,b%,c%)
710=a%
720DEFPROCfoul
730SOUND2,-15*Q%,20,2
740foul%=1:hi=50:xvel=0:yvel=0:ydist=0
750MOVE600,hi:DRAW700,hi
760ENDPROC
770DEFPROCauto
780RESTORE2210
790FORM%=1TO(RND(3)+(R%-1)*3):READZ%:NEXT
800FORM%=1TO(R%-1+RND(skill%+1)):*FX138,0,70
810NEXT
820FORM%=1TOZ%DIV10:*FX138,0,69
830NEXT
840FORM%=1TO(Z%MOD10):*FX138,0,65
850NEXT
860*FX138,0,72
870ENDPROC
880DEFPROCdisplay
890ypos%=880-(plyr%*100):xpos%=900+(go%*100):YPOS%=376-(plyr%*76)
900GCOL0,1:dist=INT(xdist):IFdist=10d$="T"ELSEd$=STR$(dist)
910MOVExpos%,ypos%:PRINTd$
920pts%(plyr%)=pts%(plyr%)+dist:pt$=STR$(pts%(plyr%)):IFpts%(plyr%)<10 pt$="0"+pt$
930MOVE1160,YPOS%:VDU127,127:PRINTpt$
940ENDPROC
950DEFPROCsound
960count%=count%+1:IFcount%=61RESTORE:count%=1
970READA,B,C:SOUND1,A*Q%,B,C:SOUND2,A*Q%,B+48,C
980ENDPROC
990DEFPROCscore
1000VDU23;8202;0;0;0;
1010FORN%=1TOnplyr%:PT%(N%)=nplyr%:pos%(N%)=1:NEXT
1020FORN%=1TOnplyr%:FORM%=1TOnplyr%
1030IFpts%(N%)<pts%(M%) PT%(N%)=(PT%(N%)-1)
1040NEXT:NEXT
1050FORN%=1TOnplyr%:sc%(N%)=sc%(N%)+PT%(N%):NEXT
1060FORN%=1TOnplyr%:FORM%=1TOnplyr%
1070IFsc%(N%)<sc%(M%) pos%(N%)=(pos%(N%)+1)
1080NEXT:NEXT
1090FORN%=1TOnplyr%
1100IFpos%(N%)=1 pos$(N%)="1st"
1110IFpos%(N%)=2 pos$(N%)="2nd"
1120IFpos%(N%)=3 pos$(N%)="3rd"
1130IFpos%(N%)=4 pos$(N%)="4th"
1140NEXT
1150PRINTTAB(0,1)CHR$(131);CHR$(157);CHR$(132);CHR$(141);TAB(12);"HIGH SCORE TABLE"
1160PRINTCHR$(131);CHR$(157);CHR$(132);CHR$(141);TAB(12);"HIGH SCORE TABLE"
1170PRINTCHR$(129);CHR$(157);CHR$(135);TAB(16)"ROUND "round%
1180PRINTTAB(11,7);"PLAYER":PRINTTAB(27,7);"SCORE"
1190FORN%=1TOnplyr%
1200PRINTTAB(3,7+(N%*3));pos$(N%);TAB(8);player$(N%);:PRINTTAB(29,7+(N%*3));sc%(N%)
1210NEXT
1220PRINTTAB(0,24)CHR$(129);CHR$(157);CHR$(135);TAB(9)"PRESS SPACE TO CONTINUE"
1230RESTORE:count%=0
1240REPEAT:G=INKEY(0):PROCsound:UNTILG=32
1250*FX15,0
1260ENDPROC
1270DEFPROCwin
1280FORN%=1TOnplyr%
1290IFpos%(N%)=1PRINTTAB(0,7+(N%*3)-1);CHR$(132);CHR$(136);
1300NEXT
1310PRINTTAB(4,21)"continue game or restart (C/R)?"
1320REPEAT:G$=GET$:UNTILG$="C"ORG$="R"
1330ENDPROC
1340DEFPROCdraw
1350VDU23;8202;0;0;0;:VDU19,8,1,0,0,0,19,9,1,0,0,0,19,10,1,0,0,0,19,11,1,0,0,0,19,13,8,0,0,0
1360COLOUR130:CLS:GCOL0,3
```


BLOOD N GUTS
ACTION



Colour Change

Darryn Lavery

This routine is for the C64 and changes text anywhere on the screen to another specified colour without having to mess about with lots of pokes.

To call the routine enter *Poke 254 old colour Poke 255 new colour Sys 49152*

```
5 SUM=0
10 FOPT=0TO30
20 PEADD
30 POKE 49152+T.D
40 SUM=SUM+D
50 NEXT
60 IF SUM<>5205 THENPPINT"CHECKSUM EPPOR" END
100 DATA 160.216,132.252,160,0,132.251
110 DATA 162,4,177.251.41,15,137,254
120 DATA 208,4,165.255,145.251,200,208
130 DATA 241,230,252.202,208,236,96
```

Pop utility

Barry Stuart

The following Spectrum utility allows the user to clear the last address from a *Gosub* from the stack. This is useful if it is necessary to exit a subroutine without using *Return*.

To call the routine use *Randomize Usr 65347* for each Pop.

```
10 CLEAR 65346
20 FOR i=65347 TO 65367: READ a: POKE i,a: NEXT i
30 DATA 237,123,61,92,225,209,122,254,62,202
40 DATA 54,31,51,229,237,115,61,92,195,118,27
```

Revolve 2

R Warwick

Following on from Ian Andrews Revolve program for the C64, this small routine demonstrates the same effect in *Sinclair Basic*.

The *A* and *B* characters inside quotation marks are graphic characters and should be entered as such.

```
10 LET a=16112
12 FOR f=0 TO 7
14 POKE USR "A"+f,PEEK (a+f)
16 NEXT f
20 PRINT AT 10,12;"*****"
22 PRINT AT 11,12;"*AAA*"
24 PRINT AT 12,12;"*AAA*"
26 PRINT AT 13,12;"*AAA*"
28 PRINT AT 14,12;"*****"
30 FOR f=0 TO 6
32 POKE USR "B"+f,PEEK (USR "A"+f+1)
34 NEXT f
36 POKE USR "B"+7,PEEK (USR "A")
40 FOR f=0 TO 7
42 POKE USR "A"+f,PEEK (USR "B"+f)
44 NEXT f
46 GO TO 20
```

We want your programs!!

Yes this is your chance to get rich and famous. Well famous anyway, as *Popular Computing Weekly* is looking for contributions to the Programming pages.

What sort of thing are we looking for? You name it – anything original from games to utilities applications and the like written in Basic machine code or anything else you can think of.

Programs for any computer will be considered not just the old faithfuls (Spectrum Amstrad, QL, Commodore, etc) so send those listings in. What we need is a working copy of the program on tape or disc plus an accompanying article or documentation that you would anticipate going with the piece, normally not over 2000 words.

Alternatively send in your short programs to the Bytes and Pieces page – what could be easier?

In return we'll pay the princely sum of £25/page for the main programming pages and £5 for each Bytes & Pieces contribution we publish. Plus the fact that your name will be indelibly carved in the *Popular* Programming Hall of Fame till time immemorial. What more could any true programmer ask?

Just send your masterpieces in to **Duncan Evans, Technical Editor, Popular Computing Weekly, 12–13 Little Newport St, London WC3 7PP** and he'll assess them post haste.



With Kenn Garroch

Out with the old chips, in with the new

C McDonnell of Plumstead, London writes

Q **Recently, I saw an advert in your magazine which caught my attention. The advert from a firm called 'Dukes Group' stated that for £60 they would convert your old Vic-20 to a Commodore 64.**

Please could you tell me, are such things possible?

I also own a Spectrum 48K and a Plus 2 but I would jump at the chance of giving my old Vic-20 a new lease of life

A The differences between the Vic-20 and the Commodore 64 lie mainly in the chips. The 64s memory is of course 64K whereas the Vic (unexpanded) is about 35K. Other major differences are the input output chips used (VIAs in the Vic, CIAs in the 64), and the operating system kernal and Basic Roms. The keyboard, cassette player and disc drive are all the same however perhaps the only advantage of getting stuck with Commodore interfaces.

It should be possible to convert the Vic into a 64 but what seems more likely is that Dukes is simply installing a new (or old) 64 circuit board into the Vic case and salvaging the useful chips from the Vic board.

How to flip your floppy

A Parsons of Kirby, Lancs writes

Q **With reference to your answer concerning 'flippy floppies' and putting a write-allow notch on the other side of the disc. I have looked in all the ads I can find but cannot see one of these gadgets for sale. Could you tell me the address of a supplier?**

A Try Evesham Micros, Bridge Street, Evesham, Worcs WR11 4RY. Tel 0386 41989. It sells a notcher for £6.95 and I'm sure they would be glad to hear from you.

No waiting, please

B Finch of Colchester, Essex writes

Q **I am thinking of getting a computer for Christmas, an Atari ST, but I am a bit concerned that the price may drop some time in the New Year. Is it worthwhile waiting or should I get one anyway?**

A I don't know whether the price is going to fall after Christmas or not but it is unlikely that you will see STs in the January sale. In the future it is possible that the price may drop a little but bear in mind that this might not be for some time, and during that time you will be without a computer.

My personal opinion is that you should not wait. You might as well have the fun of the machine over the Christmas period.

Is there anything about your computer you don't understand and which everyone else seems to take for granted? Whatever your problem *Peek* it to Kenn Garroch and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW,* 12-13 Little Newport Street, London WC2R 3LD

1986 – The year of the Amstrad

Looking back over the events of the last twelve months, it becomes apparent that 1986 belonged wholeheartedly to Amstrad Consumer Electronics. It was never out of the news and created some of the best headlines.

In fact, it is no exaggeration to say that in 1986 Amstrad changed the nature of home computing permanently: its PCW machines sold in hundreds of thousands to people who would never otherwise have bought a computer; it made individuals consider for the first time admitting IBM-compatibility into the home, and it finally put to sleep any notions that the Spectrum might be anything other than a games machine.

It stimulated the competition into thinking about new bundles and packages to approach Amstrad's value-for-money boxes, and thanks to a string of record profits, it brought home computing back to credibility in the City and the national press (the latter having been under the impression that the entire industry died at some point during the previous 18 months).

However, Amstrad wasn't solely responsible for everything that went on in 1986, though it came close. On these pages, we attempt to put the whole year into some sort of perspective.

Sugar and the PC1512 — man and machine of the year?

January

The year opened with Atari finally giving up the ghost on Digital Research's *GemWrite* and *GemPaint* as bundled packages with the Atari ST. GST's *First Word* and Stoneware's *DBMaster 1* went in instead.

Commodore's problems, which had begun in late '85 with a series of poor financial results, continued with the closure of its plant in Corby, with the loss of 250 jobs.

Acorn, which had been lurching from one financial crisis to another for most of the previous year, chirpily announced its Master Series, eight micros based on the BBC technology. Some of these bore an uncanny resemblance to Acorn's ABC range (anyone remember them?), but Acorn staunchly refused to acknowledge any relationship.

Acorn then proved that Olivetti had not taken over all its old marketing policies by announcing the prices, which started at £500.

The now Corbyless Commodore launched the 128D at the Which Computer? Show and gave the Amiga its first public airing. People were still excited about the Amiga then and the crowds flocked. Sightings of the much fabled Spectrum 128 largely proved groundless. Atari and Commodore slugged it out at CES in Las Vegas, the final score was generally believed to be Atari 1 (own goal) Commodore 0.

On the software side, US Gold bought up Ultimate, of whom little has been heard since, and *Off the Hook*, the follow up to *SoftAid*, was launched.

A somewhat quiet month for Amstrad, you'll notice.

February

Amstrad's first launch of the year was to be a low-key affair – the PCW8512 made its forthcoming presence known. Sinclair, on the other hand, finally unveiled the Spectrum 128. Its numeric keypad had evidently got lost somewhere en route between Barcelona and Cambridge, but software houses hadn't missed much, since they were busy showing forthcoming programs written especially for the 128K beast. Some of these programs still are forthcoming.

Another forthcoming product finally bit the dust, as Atari announced that it would not be launching a 260ST after all.

By this time, everyone was expecting Commodore to go bust, as it announced another series of disastrous financial results. Just to rub Commodore's nose in it, Amstrad reported record profits (£27.4 million) in the same week.

British Telecom continued software empire building and took on the marketing for Liverpool house Odin. Activision continued acquisitions Stateside, and bought up Infocom. Infocom addicts rubbed their hands in glee and waited for price cuts.

March

The PCW8512 quietly slipped into the shops. The usual compatibility problems hit the 128K Spectrum with a few games. Sinclair blamed the software developers, the software developers blamed Sinclair.

Atari announced it would release both IBM and CP/M emulators for the ST range and an Amstrad bashing word processor. All for this year. Still waiting for the IBM emulator.

People were *still* excited by the Amiga so Commodore announced that it would be available in May. It declined to put a price on the machine so people remained excited.

Rumours began to abound about Amstrad's PC – it would be released in two versions, one floppy and one hard disc based at £700 and £900 respectively. Warmish.

Amstrad owners were given a further treat with the launch of *Get Dexter* and *Thrust* from Firebird made its first appearance.

April

On the morning of April Fools Day, a "mole" rang the *Popular* offices to state that Amstrad was in the process of buying Sinclair, lock, stock and barrel.

But *Popular Computing Weekly* doesn't suffer April Fools gladly, and suggested the caller should ring back with the same information after 12.00 if they wanted to be taken seriously.

Humble pie was duly shared round the following Monday, as we crowded into Amstrad's press conference to be informed that Amstrad had bought rights to all Sinclair's current products and stocks thereof. Sir Clive would never be able to put his own name on a computer again.

Amstrad was going to produce (yet

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another) new Spectrum Amstrad did not know what the hell it was going to do with the QL Amstrad had paid just £5 million for Sinclair computers

The rest of April passed largely unnoticed as users software and peripheral companies and Amstrad s competitors (Sid and Doris Atari and Commodore) digested all this Amstrad s first move was to reorganise the Spectrum repairs and returns service QL-supporting companies quickly got together to start battling for the machine s survival

May

Robert Schifreen and Steve Gold made hacking history by being the first individuals to be convicted of a hacking offence in the UK Schifreen admitted he was behind the notorious hack into the Duke of Edinburgh s Prestel mailbox and was fined £750 for his pains Gold was fined £600 and the pair were ordered to pay £1 000 costs each

Psion launched computing s answer to the Filofax with the Organiser II an altogether much improved version of the original JVC had a go at an improvement on its original with a preview of its MSX 2

Most of the other MSX companies declared they would hold off MSX 2 for a while

CST announced Thor its QL upgrade – welcome news for QL owners who were feeling distinctly cold shouldered by Amstrad Another Scandinavian deity briefly hit the headlines Loki was revealed as a prototype machine found at Sinclair Research The specs were pretty impressive but it was always a cert that Loki was not going to see the light of day

It was a good month for new machines to be announced – Tatung and Memotech both jumped on the bandwagon with the Einstein 256 and a new Z80-based micro respectively

Commodore juggled its 64 around again with a decision to restyle the machine in a C128-lookalike case and to offer the 128D in three versions to appeal to the small business user

And as people were *still* excited by the Amiga Commodore announced prices for the machine at the same time as officially launching the machine at the Commodore Show Having revealed that the Amiga would cost £1,475 (plus Vat) or £1 675 (plus Vat and a second disc drive) there was much gasping and consulting of credit card limits The excitement didn t die down too much but the aspirations of many home computing enthusiasts did

Commodore then proceeded to surpass itself with its worst financial quarter yet a loss of £25 million worldwide

Activision launched as even more introspective computer game than *Little Computer People – Alter Ego*, where the player lived out a fantasy life steered by the computer The game came complete with a parental warning that some sections contained matter of a sexual nature and one could skip these sections with a key press We would be interested to know if a single soul took any notice of these warnings

Digital Integration added a new dimension to flight programs with *Tomahawk* a helicopter simulation and US Gold crash landed with *World Cup Carnival* which everyone agreed would have been much more acceptable if it had kept all the nice packaging in but left out the game Most buyers already had a copy – as Artic s *World Cup Soccer*

Mastertronic unstoppable as ever decided to go for a share flotation some time next year

Enterprise – turning its back on the industry

June

Commodore continued its tale of gloom and despondency with the loss of 70 more jobs at Corby This came as a surprise to those who hadn t realised that there were still 70 people working at Corby

However it also launched the Commodore 64c the restyled 64 At that time the 64c incorporated Geos a Wimp-like operating environment

Nintendo and Saga both took huge stands at Chicago CES to demonstrate games machines which set people thinking particularly as Alan Sugar had expressed interest in Nintendo s Far Eastern success

Alan Sugar infuriated QL supporters by declaring that CST had no legal right to produce its Thor QL-variant As Amstrad appeared to have no plans to produce anything based on the QL itself it all seemed a bit dog in-the-manger

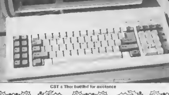
Those who had been hoping for a glimpse of Amstrad s PC at the Amstrad Show were disappointed but the rumours about it/them were gaining weight By this time it was confidently expected to be a 128K machine with 512K memory built in 3, 3½ 5¼ and hard discs three different graphics boards joystick-driven with a mouse and six bundled operating systems

A rumour then circulated that Amstrad hadn t launched it at the show because the stand wasn t big enough to take the machine s footprint

Meanwhile Spectrum Group (nothing to do with Clive or Amstrad) quietly launched the Bondwell a cheap PC compatible at £600 The battle of the low cost clones had clearly begun

Ocean finally killed off the notion that the PCW8256 was merely a word processor by launching *Batman* on it If anything it was better than any previous version the sound limitations notwithstanding A vogue for PCW games started up which sadly seems to have

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CST s Thor battled for existence

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abated somewhat now

Donmark knows how to hit the headlines and continued to demonstrate how to generate publicity by sailing headlong into a row with *Spitting Image*. Its game *Spitting Images*, a variant on the sliding block puzzle, was deemed to be rather too close to the TV title for comfort. The program was retitled Split Personalities, but not until the world and its spouse knew of the legal quarrels it had caused.

July

The life support machine was finally turned off at Enterprise with debts running into six figures, leaving the machines, the Enterprise 64 and 128, to go the way of Oric, Dragon et al, although to date no continental knight in shining armour has turned up.

The QL bandwagon refused to be beaten into submission and set up a group with one possible aim being to buy the QL rights from Amstrad if necessary. Sir Clive made a brief comeback by announcing that his wafer scale technology plans were nearing fruition.

Saga Systems decided it was time to get in on the variations-on-a-theme act with the Saga Compliment, a Spectrum upgrade kit.

News leaked out of another new Acorn machine based on — you guessed it — BBC technology. At that time it was being called the Baby BBC. It finally appeared as the Master Compact.

More machines — Opus joined the PC clones with the Turbo. This end of the market was beginning to look crowded – and still no sign of Amstrad PC.

The software scene promised plenty in July. Gargoyle, renowned for graphic adventures, announced the establishment of FTL, an arcade label. *Leader board* appeared on 64 and Atari ST. Beyond declared it had won the rights to *Star Trek* – everyone crossed their fingers and prayed it wouldn't be a repeat of Superman – and the first *Gauntlet* derivative, *Druid*, hit the screens.

August

Commodore opened its August account by strongly denying allegations that the C128 was to be dropped. (This, incidentally, is roughly equivalent to Ken Bates strongly denying that he is about to ditch John Hollins.) It also denied knowledge of a cheaper version of the Amiga. The 64c, however, made its first appearance at the Commodore Manchester show.

The Spectrum Plus 2, which would have been the most eagerly awaited launch of the year had it not been outdone by its Amstrad PC stablemate, was confirmed as a PCW Show exhibit, as was the Master Compact.

Software continued to gather strength as the run-up to autumn began. Elite got going on its list of arcade conversion with *Paperboy* and the Amiga version of *Marble Madness* made its debut.

Martin Alper of the unstoppable Mastertronic

September

The PCW show

Companies laid themselves bare and exposed their wares at the PCW show which was deemed a great success. The Amstrad PC, launched the day before, duly made its appearance and attracted huge crowds. More crowds gathered round the Spectrum Plus 2, redesigned in Amstrad grey rather than Sinclair black.

Yet more crowds visited the Atari Village, although Atari kept prototypes of its 2080ST and 4160ST in a back room, not for public consumption.

Commodore, however, remained aloof in the library atmosphere of the business exhibition hall.

In the games hall it was more like a coin op arcade. Arcade conversions were in. *Space Harrier*, *Gauntlet*, *Marble Madness*, *Shaolin's Road*, *1942*, *Yie Ar Kung Fu II*, all belted out at top volume.

On one of these, *Gauntlet*, a bizarre tiff blew up between US Gold (*Gauntlet*) and Electric Dreams (*Dauntless*). While both parties appeared to claim that the other had nicked their licence, it was eventually decided that they could both launch their games, so long as Dauntless was renamed Dandy.

The games consolers were still on the warpath, with Nintendo, through Mattel, Sega, through Ariolasoft, and Atari each deciding that video machines would be a Good Thing. At under £100 it was hard to disagree.

October

A backlog of orders for the Amstrad PC had been created almost as soon as the machine was launched, as Amstrad – it goes without saying – announced another set of record profits (up to £75 million for the full year).

At the end of the month alarms and excursions started, with the news that the PCs were prone to overheating. The share price fell. Alan Sugar got on the phone personally to deny the allegations and ended up promising to fit PC1512s with fans, along with recommending that users didn't waste their electricity by using them, as they were quite unnecessary. Curiously, Amstrad's share price did not recover.

Atari announced it would raise £40 million odd by selling shares publicly in the US. Saga finally got its Compliment launched. Commodore did some more juggling on the 64, planning to bring its America Ram expansion over to the UK. Rumours of cheaper Amiga versions persisted, especially after cutting the existing model's price by £500 for Commodore upgraders.

British Telecom also suffered at hands of the rumour mongers after a long list of amicable departures which included

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PLEASE WAIT



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the heads of Beyond (Francis Lee) and Tony Rainbird (of that ilk) Was BT about to close the software companies down? It appeared not

Gallup admitted W H Smith to its weekly chart and found its whole nature suddenly changed As W H Smith didn't stock Mastertronic titles the budget company's domination of the Top Twenty disappeared in one fell swoop Within two weeks W H Smith was taking Mastertronic's product

Games consoles make a comeback

Starglider from Rainbird finally saw the light of day, making ST owners gloat and other micro users gaze in envy

November

Amstrad created more history by *raising* the prices on its PC1512 range Due to the strength of the Yen said Amstrad Then it cut the price on its 3-inch discs made in Japan Despite the strength of the Yen, presumably

Amstrad also announced it was axing the guarantees on the hard disc PCs putting the onus on the dealers

Commodore announced a post tax quarterly profit and it was generally agreed that the troubled company had at last turned the corner

Compatibility problems predictably enough began to dog the Spectrum Plus 2 Boots even stopped selling its first consignment for a while

Christmas software began to hit the shops Level 9 s golden oldies reappeared courtesy of Rainbird as *Jewels of Darkness* and *Silicon Dreams* *Aliens* arrived The first pictures of *Star Trek* were released and looked astonishing

Water scale nearing completion

December

One of the year s biggest licensing deal, *Gauntlet* appeared to general approval

The other licensing biggie was *Space Harrier* and its publisher Elite was also having problems with its sister label 299 Classics amid mutterings from the third parties involved, of non-payment

More from the golden oldie collection – Superior relaunched *Elite* (no relation) on the BBC and Master Compact Since *Elite* achieved over 50% market penetration of BBC owners when it was first launched there was only half the market left to sell to

Brand new however, was *Top Gun* another Ocean film licence By this stage any company that hadn t yet released for Christmas was holding off until January 1987 or February or

Atari was preparing after its financial boost in November for a no-holds-barred assault on the market

Price cuts new STs new games consoles more software support no stone to be left unturned Watch this space

And MikroGen one of the longest serving companies in the Spectrum market famous ironically mainly for *Wally* and his family at last gave up the independent battle and succumbed to CSD better known as Creative Sparks budget house and software distributor

Lastly the BBC was not convinced by the success of Sugar that home computing was worth its time and money and decided to axe *Micro Live* the only TV series to cover computing specifically

Got those programmers' blues

Amstrad owner Charles Wood found that getting to grips with programming wasn't quite as straightforward as he had hoped . . .

In my pre computer days, I was every feminist's idea of Mr Average when not slumped in front of the telly or being nagged into undertaking the odd DIY project like changing a fuse I could be found propping up the bar in my local. Nothing very exciting on the career front either my job was about as intellectually demanding as an episode of *Crossroads* and the old grey matter was atrophying faster than the fruit trees round Chernobyl

Born a mere 30 days before Herr Hitler copped a cyanide overdose, I was approaching that state of suspended animation known as the male menopause in fact my wife took to calling me Spud – not on account of any Irish antecedents but because I was gradually but inexorably turning into a vegetable

Came the fateful month of June 1984 – the month Amstrad's *CPC464* reached the High Street the month that marked my change from a reasonably affluent computer illiterate slob to a penniless computer-semi-literate slob

This is just what I need I thought, a hobby which will prove both mentally stimulating and entertaining a useful lever also to prise my way into the exclusive clique of saloon bar computer poseurs

Ignoring the warnings of my friends ("It'll be a five minute wonder") I went down to Dixons cash in hand An adenoidal youth who looks all of 14 sells me a *464* (£329), a joystick (£12) six blank tapes (£2) and *Amstrad Basic Part 1* (£19)

"Cor" he says counting £362 worth of readies into the till, "that's the second colour computer I've sold in an hour"

"Excuse me" I ask "will I be able to use a word processor with this?"

"Dunno" he says and turns away to talk to the Photographic Assistant

Back home I unpack and set-up the *464* with the same kind of awe and reverence I lavished on my first-ever motor-car many summers ago

I'm over the moon Brian, having bought myself not only the latest microcompute but a life-long hobby into the bargain – and all for under £370 Well there's no fool like an old fool! How was I to know that this was just the start of the big spending, that during the next two years, I'd be writing out so many cheques that I'd end up with inflamed tendons in the right wrist?

The financial floodgates are first forced open a week later when I get a phone call from *Amsoft* Surely you'd like to join the *Amstrad User Club*, cajoles the voice

I'm putty in her hands and immediately dash off a cheque (£19) Shortly afterwards, they send me a gold-embossed membership card complete with my very own membership number Very useful!

I also receive the User-Club magazine and a list of none-too cheap goodies offered for sale by *Amsoft* It appears that I can't possibly entertain any pretensions to being a programmer without a *Tool Box* (£10) a screen-designer (£14.95) and three books on the *464* (£18) Another cheque is despatched

The summer nights pass in a blur of *Gosubs, Left$ Right$ Whiles* and *Wends* Eventually my very first program a home accounts masterpiece hits the screen Who cares if it's a rambling labyrinth of unstructured, inefficient code boasting more *Gotos* than a measles victim has spots? Who cares if it runs slower than treacle rolling downhill? Who cares if it swallows up 30K of the available 40K of Ram?

It's all my own work folks and I get the neighbours in to have a look I cancel plans to throw a street party when one of them a wise guy says "I'd deep-six that rubbish and use a pen and paper, if I were you – it'd be ten times quicker"

By now I've mastered the basics of Basic although I'm a little flakey on interrupts logical expressions and anything else requiring a modicum of brain power I feel a little light relief would be welcome Out I go and *Flight Path 737* (£6.95) *Crazy Golf* (£8.95) and *House of Usher* (£6.95) Too late I discover that I've purchased the three biggest dodos ever released for the *464!*

Round about now I'm getting heartily sick of waiting ten minutes for my programs to load and I'm even more frustrated by the endless read errors which continually plague the tape system Right on cue Amstrad brings out its *DD1* disc drive I'm toying with the idea of buying one when would you believe I meet the proverbial man in a pub

This one owns a computer store is a real hard nose and just happens to have a brand new *DD1* in the boot of his car He'll let me have it for £199 and seeing as how I seem a decent bloke he'll transfer *Wordstar* to a 3 inch disc and throw that in for free

What a deal especially as by this time I'm on my fifth pint and the critical faculties have been suspended until closing-time Naturally out comes the genuine leather Executive Money-Manager and I write him a cheque Or rather I write him four cheques three for £50 and one for £49 "Don't forget to put your banker's card number on each" says Hard Nose, making with the shoulders "we don't want them bouncing round the bank do we? Haw-haw"

Next morning I wake up with a bad head a new *DD1* and the realisation that I could have bought it from the User Club for a mere £169! Presumably friend Hard-Nose is still out there somewhere struggling to convert *Wordstar* for me, because I haven't clapped eyes on him or the program from that day to this

Now that I'm geared up for high speed data storage and retrieval I'm obviously going to need some discs I buy ten (£45.88) Ouch!

But it's a worthwhile investment because now I can get down to some serious computing and maybe write a best-selling piece of software No good in Basic mind you so I'd better get *au fait* with machine code

Three books on Machine Code for idiots a m/c tutor and an assembler (total cost £62) should do the trick Some hope! Contrary to what the books claim it's about as easy as trying to talk down a crippled jumbo jet using only a pair of semaphore flags and a cardboard megaphone

I dump the lot on my "pending" shelf with the vague intention of resuming the fight at a later date I suspect that by the time I finally master the Z80 it'll be as obsolete as Babbage's *Difference Engine*

Shortly afterwards I see an advert for the *Quill Adventure Writer* (£20.45) My grasshopper mind immediately latches onto this as a sure-fire way of making money Surely I could knock out a commercially viable game – shouldn't take longer than a week! Two months later I've churned out a pile of maps a foot high (adventure maps £2.50 per book) and it's still no nearer completion than the day I started

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continued from page 73

Eventually by putting in four hours a night it s ready – nothing too cerebral you understand just the usual infantile and stereotyped waffle about whether or not *Kraal* the Maste Orc, will get a double hernia if he tries to lift the *Great Stone of Majubri* I call it *A Breacher in the Conpen* and am just about to approach Interceptor Micros with it when I'm shown a copy of *Lords of Midnight* My amateurish effort pales into feeble insignificance by comparison In the bin it goes

I'm beginning to suspect by this time that the only way I'll ever make any money out of my micro is by selling it Then I have a brainwave Why not write the definitive English novel? After all I passed O level E Lang and E Lit didn t I? I splash out on a *DMP2000* (£136) a *Protext* word processor (£49 95) and about £30 worth of paper It turns out to be a stroke of genius, because I work at a college for mature students and they are always looking for someone to type up dissertations precis and essays

At last I ve found a nice little earner raking-in 50p per double-spaced A4 page That s when Sugar decides to stab me in the back by bringing out the *PCW 8256* The students a well-heeled lot take to it like a someone drowning takes to a life belt and overnight the bottom drops out of the market

This is the most important peripheral '

Unfazed I grit the teeth and plough on with the novel The big problem is memory or rather the lack of it Trying to write something stretching to 80 000 words when you have a TPA of only 40K is like asking Shakespeare to write *Hamlet* on 5 inch × 3 inch catalogue cards And the cost of paper! In the interests of economy, I m currently experimenting with toilet roll but hard paper is difficult to get your hands on these days and soft tissue isn t consistent with the crispest of print

So here I am with a two and a half year-old micro which by today s standards, is no more than a glorified game-player, a printer that has to be switched on and off twenty times before it will print and a VDU which grows dimmer as each month passes I calculate that I ve spent £2000 on hardware software books magazines and such peripheral unessentials as screen filters and document holders even a desk If I was to sell the whole lot prior to upgrading to something more powerful, I doubt if I would be offered more than £300 And if I buy say an ST what do I do with the 20 or so 3 inch discs which are packed with utilities and WP files? Incompatibility is the bane of the impoverished user!

Guess I ll keep my existing system maybe slap-on an extra 64K of Ram (£49 99) because for all its shortcomings the *464* holds a special place in my affections My very first computer

The novel? Well having rewritten Chapter one so often that I can quote it word for word I ve succumbed to a massive dose of creative block Frankly, I m finding it s a lot easier to lie in bed fantasising about the literary lionisation that ll come my way once the book rolls off the presses than it is to actually sit down and write the bloody thing Ah well, think I ll go for a lie down perhaps work out how I ll handle the Melvyn Bragg interview when the time comes

Turn at page 77 if you want the solution

The end of programmers blues

Christina Erskine explains the simplest and most effective ways of getting into commercial programming

Have you ever wondered if you could make a living from home computer programming? The next David Jones, Andrew Braybrook, or Anita Sinclair, perhaps?

If all this sounds like the stuff that dreams are made of — or feasible but you've no idea how to go about it, read on.

For the purposes of this article, we'll assume that any impending masterpieces from your computer are going to be games. While the utilities /business programs market works slightly differently, as a more specialised field, all the information below will apply. However, on the utilities side, there is plenty of scope for budding artists or musicians in the games market.

The majority of software houses have evaluation staff whose job it is to sort through the many submissions from members of the public and spot those they wish to take up. There are only so many professional programmers to go round and everyone wants to be the first to discover new talent. And the competition among untried programmers is fierce – Firebird, for instance, gets around 120 submissions a month.

First steps

The first thing you need is at least half a game, plus a coherent idea about how the other half is going to progress. No self respecting software company will take a blind bit of notice if you write saying your name is Jones and you intend to begin your definitive Spectrum shoot 'em up within the next three months.

However, it is not necessary to send completed games off to software houses. They will want to work with you towards the finished title in any case – what you need to do is impress them with the idea.

So let's say that you have a game idea and half a dozen screens worked out. It looks good, in fact, it looks better than most of the stuff you're buying at the moment. What next?

It should go without saying that you should carefully target which company to send it off to. To put it crassly, don't send your all action shoot 'em up to Level 9 for evaluation. Slightly less crassly, if your embryonic title bears Uridium-style graphics and play, there's not much point in approaching Hewson: your game should sit happily within the company's catalogue, so submitting it to a house with a broad range would be safest.

Remember too that the market changes very quickly. You may have an excellent martial arts game in the making, but the karate/kung fu market is very crowded already, and most companies are looking for something else. A game based on a platform and ladders format

Mike Male (right) hands over his first program to Andrea Hewson (left)

is more likely to appeal to a budget label and even *Knight Lore* style games are beginning to appear at £1.99/£2.99 level now. A spark of originality should get your further.

So should you send as many copies as possible to as many companies as you can think of, or try the companies one at a time? David Jones, programmer of *Finders Keepers* and *Knight Tyme*, advises caution. "If you do send out to lots of companies, you must keep a very strict control on who's got what," he says. "It's also a good idea to make a mark – in the coding – on each one, so that it's undeniably yours."

David also reckons it's a good idea to visit companies in person with your submission, so that you give a fuller explanation of the title in person. He, incidentally, showed *Magic Knight* (released as *Finders Keepers*) to both Mastertronic and Ocean when he was starting out.

Submission format

A copy of the game (as far as it goes), of course, sent by registered post. A written summary of what's on the tape/disc plus plans for the rest of it are also essential. If you include some cheat routines, so that the evaluators can see everything more quickly, it'll be appreciated. A map, if the game is location orientated, is also a good idea.

Most companies would also like to know a bit about you, so if you have any programming experience (and computer using the computer club's records counts as experience), mention it.

Rejection and acceptance

You may have to wait a while before hearing from the companies which have your program. This does not necessarily mean it's got lost or thrown away, since the established companies, almost without exception, now have efficient departments to deal with submissions.

If your program is rejected, try someone else. If you are given reasons for the rejection, work this to your advantage and iron out the problems before resubmitting elsewhere.

It could be said that it's when a title is accepted, or conditionally taken on, that this is where your problems begin. This is where changes to the game, contracts, payments, etc, all start to raise their ugly heads.

Do not imagine that you will get a letter plus a contract, saying the game will be released in three weeks time as submitted.

Different companies have different procedures in the development of a title, but a likely scenario runs as follows: the evaluation department will have their own ideas as to how they want to see your project take shape, and will discuss with you how they want you to proceed, where the game's strong and weak points are, what they would like to change, or add, and give you deadlines for the next stage of programming.

Taking a firm line and refusing to alter anything of your masterpiece will see your acceptance turned into a rejection faster than light.

You probably won't get a contract from the company until details like the above have been hammered out and both parties have expressed commitment to the project.

When a contract does arrive, and YOU MUST INSIST THAT YOU HAVE A WRITTEN CONTRACT, don't sign it straightaway. Find somebody with legal

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experience – a friend, relative business associate whatever – if you can t afford a solicitor to go over it in detail and check the small print Sign it when both you and the software company have agreed on any alterations and then stick like glue to your side of it

Payment

Get this sorted out as soon as possible You will not make a fortune so don t expect one Generally speaking and again payment terms will vary from company to company you can take a one off advance payment which can be anywhere between £500–£10 000 without royalties or royalties (usually somewhere between 1–10%) and no advance or both (in which case both figures will be at the lower end of the scale)

An advance will ensure that you get some money and will protect against the game being a poor seller and the royalties being virtually non-existent

If the game sells hugely then obviously you re better off on a royalty agreement Often you will be able to negotiate how you wish to be paid some companies stick to one form of agreement

Your overall payment if the game is to be sold as a budget title will probably differ little from a full-priced program Budget titles generally sell in greater volume

Specialised programming

Other than complete games programmers software companies are also on the lookout for artists who can design title screens and particularly musicians for backing tracks and conversion specialists Most companies agree that it is easy to find loading screen designers these days but that proficient musicians are still much too thin on the ground

If you reckon that your musical compositions rate professional attention then all the above points apply specifically to music tapes

If you re interested in conversion work then you need to know both the source machine and the proposed destination machine very well indeed And while conversion from say Spectrum to Amstrad is fairly easy, demand is higher for converting to different processor-based micro or scaling down a Commodore 64 game to look good on the C16, for instance In this area companies prefer to work with people with a proven track record

Conclusion

You may have reached this point deciding that this whole scenario is decidedly far-fetched Obviously it is only going to be the talented few who will move from computer hobbyist to having a program published commercially, but the software companies are always scouting for that talented few

The list of programmers who have made it by that route is a long one – Steve Turner and Mike Male both joined Hewson this way David Jones of Mastertronic started by touting program round companies

Druid landed on the evaluator s desk at Firebird as one of many that day

The opportunities are certainly there



A whole Spectrum of choice

Mark Jenkins checks out new Spectrum packages . . .

A mysteriously unsigned letter from Broxburn West Lothian asks is there any good software available for the Spectrum in the Midi area and what kind of interface would I need to connect it to a Casio CZ-101? So for our anonymous Scottish correspondent a run-down of some Spectrum software

The main contenders in the Spectrum field are XRI which markets a system called Micon (Midi CONvertor) The Micon is a cartridge which fits into the Spectrum s user port and features a Midi input and output and various synchronisation options

Once you have the interface installed there are two main things you can do displayed simultaneously and edit them quickly and effectively

XRI currently markets software sequencer package called Multitracker which offers real time recording eight polyphonic tracks chaining of bars to form a complete song looping and overdubbing with real or step time input There s also a step time sequencer with 24 000 note capacity music scoring full editing and chord entry if desired

The XRI Casio CZ Editor comes with a complete set of 92 new sounds and allows you to create new sounds and dump up to 16 at a time into the synth The graphic display shows the waveform in use for each sound details of the envelope settings, and so on

with the Casio or any similar synth The first is to play it using data recorded either live or a single step at a time Since the CZ-101 can play either eight-note chords or four different monophonic sounds simultaneously, you could record up to four parts seperately, edit them to your satisfaction, and replay them together Adding more synthesisers or a synchronised drum machine would be easy

Alternatively you could use the Spectrum to help edit the sounds on the CZ-101 which like most modern synths only has one control to alter all the available sound parameters This method can be on the slow side, and is definitely non visual whereas a good piece of editing software will allow you to see all the main parameters of a sound

Also available from XRI are a Yamaha DX7/TX7 Editor and a Data Base System which works with most synths and sequencers to store sound patches and songs

The XRI system is constantly being updated so a letter to the company to confirm the latest specifications and costs is advisable However the latest figures we have are £49 95 for the Midi interface £38 95 for the Multitracker software £38 95 for the Step Sequencer £22 95 for the Data Base System and £24 95 for the DX/TX Editor XRI will also create custom software to your own specifications

Newly launched for the Spectrum is the Y10 System Midi recorder which for £199 95 offers an interface with Midi tape and 24/48/96 pulse per quarter note synchronisation single screen operation Midi song pointers, so other units can read the current song position metronome sequence merge and much more DX/TX editing software is £19 95 and the system is available from Icon Designs at the address given below

If you re willing to splash out on a little more hardware as well the Ram Music Machine is a good bet at £49 99 Compatible with the Spectrum 48K Plus 128K and Plus 2 this unit will offer you sequencing sound sampling and much more and has a Midi output so you can combine its sampled sounds with notes played on the Casio or other synth The sequencing isn t as powerful as on the XRI system but being able to play the pre recorded sampled drum sounds or a sampled sound of your own is a great bonus

For those using the Amstrad CPC micros a company called DHCP Electronics are marketing a Midi interface a Casio CZ 101 and Casio CZ-1000 editing software package plus a Korg DW6000 and Korg DW8000 editing package a universal Midi sequencer package and suitable connector leads

Incidentally if you re experiencing Midi problems such as not having enough Thru sockets to connect all your equipment together or finding delays creeping into the system when your software doesn t have a compensating function – fear not! A Syncom Midi Thru Box at £29 95 will solve your problems Using a £4 95 9V power supply it has one Midi In and eight Midi Thru sockets so you can run all your equipment in a Star Network rather than a Chain which sovles a lot of delay problems and also makes Thru sockets on all your equipment unnecessary

Syncom Midi Research Unit C Hill Farm Great Dunham King s Lynn Norfolk PE32 2LQ (07605 644/645)
Icon Designs 423 Newmarket Road Cambridge (0223 61293)
Ram Electronics Unit 16 Redfields Ind Park Redfield Lane Church Crookham Aldershot Hants GU13 0RE
XRI Systems 10 Sunnybank Road Wylde Green Sutton Coldfield West Midlands B73 5RE (021 382 6048 – closed Wednesdays)
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Caught in the net

Compunet enthusiast Graham Edkins brings you up-to-date on the Commodore network's latest features, with some good news for BBC owners, too

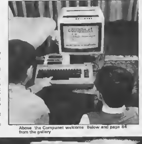


Compunet for those who have not come across it yet is an on-line network which can be accessed by Commodore 64/128 owners with the specially designed Commodore modem. The plug-in modem has auto dial & text editor built in and it also acts as a protection toggle on downloaded commercial software. The online code is automatically downloaded into the modem on your first connection or if any upgrades have been made. This can then be saved off for future use.

> "The graphics, advice areas, demos, sigs, programs and magazines of Compunet are all 'by the users, for the users'."

Once you are connected you are faced with a service that has a vast array of commercial software all of which can be saved to tape or disc, an on-line shopping area, an E mail service which will allow text up to 8K to be sent to up to five people at once, the multi user game *MUD* and a chatline called Partyline which I have yet to see bettered in the UK. Everything else that you see, the graphics, advice areas, Sigs, demos, programs, magazines and news areas (except Cnet news) is by the users – for the users. It is this last fact that contributes most to Compunet's appeal.

The news and for that matter the main talking point on Compunet is that it is planning to have a new mainframe. Since its creation in 1984 a recurring problem has been that of speed and another of capacity. A major cause of these problems has been that up until now it has run on a network of Dec 10s which were not designed for this type of network. The new mainframe which is due next year will be specifically designed for the needs of this system with the aim of a faster service and an opportunity to expand.



Above the Compunet welcome. Below and page 84 from the gallery

Expansion of the system is indeed planned and Compunet is to give access to the BBC micro once the new mainframe is up and running.

Allowing a new computer online is not as easy as it sounds, since a Rom has had to be made and tested. The BBC Rom will plug into any standard modem but a disc drive will also be needed for temporary memory storage. Once online there will be no segregation of the two micros except for machine specific areas. The mainframe will know which micro you are using and so prevent you downloading software designed for the other.

BBC micros have for a long time been praised for their graphic capabilitys and graphics are one of Compunet's specialities. There are hundreds of hi res graphic demos on the system which can be downloaded free, most of these are quite simply stunning and some of the artists have gone on to produce title screens etc, for software houses. Part of the fun is finding these gems but to help you major art areas can be reached with the use of Alpha *Gotos* ie select *Goto* and type *Art* or *Arth*. Some of the more notable uploads are in the form of demos: *Goto 'Demos'* and *Dem 1 to 10*.



Demoh has some great stuff. AM12's Mechanix (Press any key) & Working 64 (watch top left) at 202024 both have music by Rob Hubbard. Also in the area there are the Mad Arabs with a demo called Phantasmagoria at page 207007 and SIRs Transputer Demo @ 206850.

Compunet also boasts the ability to run programs on-line. Some examples of this are in Action the

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Communications

on line Some examples of this are in "Action" the best of which are *Electronic Dreams* (MACH81) at 188465 *Hendrix* at 210903 by RS4 and *Meatloaf* on 210907 from ARC86 but there are many more Demos of games are also well covered one of the better known uploaders is the games programmer Jeff Minter His demos can be downloaded free from 206835 and include *Made in France* which is a game in itself and *Taurus II* a moving graphic Jeff Minter was told by some USA visitors to the recent Commodore show that they had not seen his games but they had seen the demos!

Computer musicians also have major areas on Compunet and similarly can go on to get commissions from software houses The place to look is *Musich* where you will find amongst many other uploads *Mozart* and *Phantoms* from Rob Hubbard (*Goto Rob*)

The Good Gotos Guide by JMS4 on Page 207857 lists over 100 utilities available on Compunet, and many of these are free It will be no surprise therefore that in 18 months I have amassed over 40 discs full of free down loads from the system If you are not yet online you may like to know that Compunet has produced a demo disc which is available from them for £1 99 the demos have proved so popular that Cnet have even received a request from the Australian online service Viatel for some of them to be uploaded there

To close a couple of things that are to come up on Cnet are Debateline which is a kind of long upload chatline with a serious edge and a new version of the online code which will beep at the end of an up/download

Your response, comment or questions are welcomed via EMAIL to me at Telecom Gold 72 MAG60070 Prestel 213739079 or Compunet GE81

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★ ICON TOOLKIT £5

This package contains all you need to turn your QL into an Icon controlled super machine. It takes the tedium out of typing. Unlike some systems ours is fully programmable … you can program the icons to do anything you like … you can of course redesign the icons themselves and we have even included a special designer program to make the job a bit easier.

This toolkit also contains lots of new graphics commands, all of which have the ability to draw using user defined patterns, not just solid lines. There is even a new fill command that will fill any shape with any user defined pattern (features like these are normally only to be found in the most expensive of drawing programs). We even throw in a special pattern designer so that you can design your own new patterns at leisure.

There are also 2 Epson compatible screen dumps, a print spooler and an on screen notepad.

★ GAME TOOLKIT £5

This toolkit contains everything you need to create fast animated arcade games on your QL. It also contains extra routines to allow you to produce multi-tasking tunes like the ones found in all the best arcade games. You can have up to 32 sprites all of which can have up to 16 frames of animation. Collision detection is also provided and of course it goes without saying that our sprites are some of the fastest and smoothest around. A sprite designer is also included.

★ COMPLETE TOOLKIT £10

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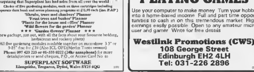
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Amstrad CPC

Program *Top Gun* **Type** Arcade **Micro** Amstrad CPC **Price** £8 95 (tape), £14 95 (disc) **Supplier** Ocean, 6 Central Street Manchester M2 5NS

Program *Jail Break* **Type** Arcade **Micro** Amstrad CPC **Price** £8 95 (tape) £14 95 (disc) **Supplier** Konami via Nemesis Management PO Box 67, London SW11 1BS

First of the Konami 'home grown arcade conversions – and (as Barry Norman would say) why not?

Catalyst Coders has done a reasonable job – but the game itself is infuriatingly difficult You manoeuvre your law enforcer along the street, community policing like mad with a Colt 45 although extra weapons can be obtained by picking up hostages that are scattered around the place

A sound enough start but not quite fast enough or responsive enough for my taste although alternative psychologists might find the astonishing level of violence attained useful in Gestalt therapy

One and only

Program *One* **Type** Arcade **Micro** Amstrad CPC **Price** £9 95 (tape) £14 95 (disc) **Supplier** Infogrames Enfield Middlesex

Sad to relate much of the software that's being produced at the moment – particularly from the big guys is very much production line stuff To say it doesn't have any soul might sound a little metaphysical – maybe sparkle is the lacking factor Well whatever much of the UK output hasn't got right now *One* (brought to us by Infogrames) has

Bright, well designed graphics, neat animation, quirky plot and gameplay that'll keep you going for more than five minutes You control a naughty little baby called Valentin who is out to make the life of his babysitter Alfred complete hell

All the elements of classic cartoon slapstick are there – buckets of water rakes etc as you set traps for him while attempting to avoid being caught Original delightful so check it out

Program *Peter Shilton's Handball Maradona* **Type** Arcade **Micro** Amstrad CPC **Price** £6 95 **Supplier** Grand Slam, Argue Press Software Victory House, Leicester Place London WC2

The Argus Press proliferation of label names con-

tinues this time with Grand Slam which intends to produce sports orientated software selling at £6 95

Simple action as your goalmouth is attacked and you move/dive to save the day Might appeal to footballing nutters or those of simple taste but only if you could get it to run our Amstrad version appeared to be fatally bugged

Program *Golf* **Type** Simulation **Micro** Amstrad CPC **Price** £8 95 (tape) £14 95 (disc) **Supplier** Imagine 6 Central Street Manchester M2 5NS

Program *Super Soccer* **Type** Simulation **Micro** Amstrad CPC **Price** £8 95 (tape) £14 95 (disc) **Supplier** Imagine, 6 Central Street Manchester M2 5NS

Program *Electric Lantern Show* **Type** Utility **Micro** Amstrad CPC **Price** £14 95 **Supplier** Pride Utilities, 7 Chalton Heights Luton Beds

Electric Lantern Show is the latest in a popular line of utility programs for the Amstrad from Pride Utilities Easy to use and aimed very much at the entertainment market it enables you to produce giant size screen dumps of your own graphics created either with AmSoft s *Screen Designer* or the Electric Studio Lightpen or using screens from commercial programs

The package consists of the established *Printer Pac 2* program, plus a graphics handler *Printer Pac 2* also gives you extra Basic commands allowing you to dump normal or giant sized screens to Amstrad or various

Epson-compatible printers The graphics handler lets you alter the screen mode of a picture change its colour balance zoom in on any portions invert sections or create multiple images before printing out You can also save images to disc in a compressed form such that each screen takes up only around 11K

The *Lantern Show* comes complete with some stunning graphics by artist Jill Lawson which are useful for experimentation and worth seeing in themselves The package is being test marketed by mail order at £14 95 and on the strength of the preview version looks like another useful and practical product for Amstrad users

Atari ST

Program *Timelink* **Type** Utility **Micro** Atari ST **Price** £49 95 **Supplier** Softechnics 35–58 Southampton Street London WC2

Program *Rhythm* **Type** Utility **Micro** Atari ST **Price** £24 95 **Supplier** Softechnics 35–58 Southampton Street London WC2

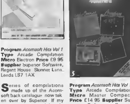
BBC/Electron

Program *Power Pack* **Type** Arcade Compilation **Micro** BBC B **Price** £9 95 **Supplier** Audiogenic PO Box 88 Reading Berkshire RG7 4AA

Program *Power Pack* **Type** Arcade Compilation **Micro** Electron **Price** £9 95 **Supplier** Audiogenic PO Box 88 Reading Berkshire RG7 4AA

Program *Colossus 4 Chess* **Type** Strategy **Micro** BBC B/Electron **Price** £9 95 (tape) £14 95 (disc) **Supplier** CDS Software Beckett Road, Doncaster DN2 4AD

Classic chess program now available on BBC format Go for it chess buffs



Program *Acornsoft Hits Vol 1* **Type** Arcade Compilation **Micro** Electron **Price** £9 95 **Supplier** Superior Software, Regent House Skinner Lane Leeds LS7 1AX

Series of compilations made up of the Acornsoft back catalogue now taken over by Superior If my memory serves me I thought most compilations had nine or ten games on – these have four All oldies of a good standard however – *Planetoid* still being the best implementation of *Defender* to my mind

Program *Acornsoft Hits Vol 2* **Type** Arcade Compilation **Micro** Electron **Price** £9 95 **Supplier** Superior Software, Regent House Skinner Lane Leeds LS7 1AX

Program *Acornsoft Hits Vol 1* **Type** Arcade Compilation **Micro** BBC B **Price** £9 95 (tape) £11 95 (disc) **Supplier** Superior Software Regent House Skinner Lane Leeds LS7 1AX



Program *Acornsoft Hits Vol 2* **Type** Arcade Compilation **Micro** BBC B **Price** £9 95 (tape) £11 95 (disc) **Supplier** Superior Software, Regent House Skinner Lane Leeds LS7 1AX

Program *Acornsoft Hits Vol 1* **Type** Arcade Compilation **Micro** Master Compact **Price** £14 95 **Supplier** Superior Software Regent House Skinner Lane Leeds LS7 1AX

Program *Acornsoft Hits Vol 2* **Type** Arcade Compilation

continued on page 92 ▶

New Releases

◀ continued from page 91
Micro Master Compact **Price** £14 95 **Supplier** Superior Software, Regent House Skinner Lane Leeds LS7 1AX

Commodore 64

Program *Back to Reality* **Type** Arcade Adventure **Micro** Commodore 64 **Price** £1 99 **Supplier** Mastertronic 8–10 Paul Street, London EC2

Saving not just the world, but the whole solar system too! Quite a task but there is the added bonus that if you succeed you end up immortal Makes a change from getting the girl I guess

Program *Assault Machine* **Type** Arcade/Strategy **Micro** Commodore 64 **Price** £9 95 (tape) £12 95 (disc) **Supplier** Nexus Productions DSB House 30 High Street, Beckenham, Kent BR2 0XW

Strategy/Arcade combination as you construct your team of robots and then battle to land them on a series of ten islands

Program *Legend of the Apache Gold* **Type** Graphic Adventure **Micro** Commodore 64 **Price** £7 95 **Supplier** Incentive Software 2 Minerva House, Calleva Park, Aldermaston, Berks RG7 4QW

Program *Winter Wonderland* **Type** Graphic Adventure **Micro** Commodore 64 **Price** £7 95 **Supplier** Incentive Software 2 Minerva House Calleva Park Aldermaston, Berks RG7 4QW

Program *Avenger – Way of the Tiger II* **Type** Arcade Adventure **Micro** Commodore 64 **Price** £9 95 (tape), £14 95 (disc) **Supplier** Gremlin Graphics Alpha House, 10 Carver Street, Sheffield S1 4FS

Commodore version of this Gremlin follow-up that is more than just the *Gauntlet* clone it may first seem

Program *Micro Rhythm* **Type** Utility **Micro** Commodore 64 **Price** £1 99 **Supplier** Firebird 76 New Oxford Street, London WC1

Must be the loudest program per penny spent ever Don t expect a full functioning professional drum machine (how could you for £1 99?) but you can have amazing fun messing around Enjoy – and don t forget the ear plugs

Program *The Prince* **Type** Arcade Adventure **Micro** Commodore 64 **Price** £1 99 **Supplier** Firebird 76 New Oxford Street London WC1

Program *Firelord* **Type** Arcade Adventure **Micro** Commodore 64 **Price** £8 95 (tape) £12 95 (disc) **Supplier** Hewson, 56b Milton Trading Estate Milton Abingdon Oxon OX14 4RX

Conversion of largely underrated Hewson game Dedicated arcade adventurers are unlikely to be disappointed

Program *Top Gun* **Type** Arcade **Micro** Commodore 64 **Price** £8 95 (tape) £12 95 (disc) **Supplier** Ocean, 6 Central Street, Manchester M2 5NS

Program *Terra Cresta* **Type** Arcade **Micro** Commodore 64 **Price** £8 95 (tape) £12 95 (disc) **Supplier** Imagine, 6 Central Street Manchester M2 5NS

Coin op conversion from the Imagine/Ocean stable which has the aliens lining up to be taken out Well programmed it might lack a little sparkle but it s a good enough blast

Program *Peter Shilton s Handball Maradona* **Type** Arcade **Micro** Commodore 64 **Price** £6 95 **Supplier** Grand Slam Argus Press Software Victory House, Leicester Place London WC2

Program *Jail Break* **Type** Arcade **Micro** Commodore 64 **Price** £8 95 (tape) £14 95 (disc) **Supplier** Konami via Nemesis Management PO Box 67 London SW11 16S

Program *Howard the Duck* **Type** Arcade **Micro** Commodore 64 **Price** £9 99 (tape) £14 95 (disc) **Supplier** Activision Activision House 23 Pond Street, Hampstead London NW3 2PN

The good news – *Howard the Duck* the computer game is much better than *Howard the Duck* the movie The bad news – the movie was really terrible

Actually Activision has produced a very polished and professional little number that has your nicely animated duckie sprite wandering across Volcano Island biffing mutants, flying around and confronting the Dark Overlord

Several levels of difficulty mean that it s instantly playable

Ducks everywhere will love it hardened players will yearn for a little more originality and it will almost certainly not snow on Christmas Day

Program *Moonmist* **Type** Adventure **Micro** Commodore 64 **Price** £24 99 (disc only) **Supplier** Activision 23 Pond Street Hampstead London NW3

Attention Commodore adventurers – or would be Commodore adventurers at least – for here is the latest from Infocom (the acknowledged master of the art) to hit this country It s an Introductory Level mystery, named *Moonmist*

Atmospheric as ever the story involves a murder plot in a haunted Cornish castle Excellent stuff with four separate versions on the disc, so even if you solve it there s life in it yet For extra realism, play it while eating a cream tea drinking a mug of cider down the bottom of a tin mine

Commodore 128

Program *Graham Gooch's Test Cricket* **Type** Simulation

Micro Commodore 128 **Price** £9 95 (tape) £11 95 (disc) **Supplier** Audiogenic, PO Box 88 Reading Berkshire RG7 4AA

Upgrade of the original 64 version with a few extras bolted on These number some digitized speech nine test squads to choose from (South Africa is not included for extra realism but curiously the Kerry Packer Blacklegs XI are missing), a two player arcade mode practice mode and action replays to name but five It s the only way we ll ever beat the West Indies, so make the most of it

MSX

Program *The Dam Busters* **Type** Arcade/Simulation **Micro** MSX **Price** £9 99 **Supplier** US Gold Unit 273, Holford Way, Holford Birmingham B6 7AX

Navigate across Europe zap the night fighters home onto the lakes drop the bombs Complex and tricky stuff

Program *Zoot* **Type** Arcade **Micro** MSX **Price** £2 99 **Supplier** Bug-Byte, Argus Press Software Group Victory House Leicester Place London WC2

Cracking little game that knocked us out on other formats earlier in the year Well original – a big green light for this one

Program *Winter Olympics* **Type** Arcade **Micro** MSX **Price** £2 95 **Supplier** Tynesoft Addison Industrial Estate Blaydon Upon Tyne Tyne & Wear NE21 4TE

Program *Silicon Dreams* **Type** Adventure Compilation **Micro** MSX **Price** £14 95 **Supplier** Rainbird Software, 74 New Oxford Street London WC1A 1PS

Program *Footballer of the Year* **Type** Strategy/Arcade **Micro** MSX **Price** £7 95 **Supplier** Gremlin Graphics Alpha House 10 Carver Street Sheffield S1 4FS

Disappointing strategy game with naff arcade element bolted on Give it the early bath

Program *Dynamite Dan* **Type** Arcade **Micro** MSX **Price** £8 95 **Supplier** Mirrorsoft, Maxwell House 74 Worship Street, London EC2A 2EN

Program *Spitfire 40* **Type** Arcade/Simulation **Micro** MSX **Price** £9 95 **Supplier** Mirrorsoft Maxwell House 74 Worship Street London EC2A 2EN

More WWII action, this time from Mirrorsoft More flight/combat simulation than *Dambusters* (see above) but none the worse for that

Program *Wizard's Lair* **Type** Arcade Adventure **Micro** MSX **Price** £8 95 **Supplier** Bubble Bus #7 High Street, Tonbridge Kent TN9 1RX

Reasonable conversion job of an old Bubble Bus release that went down well at the time ??? screens of weebling around

QL

Program *Revisor* **Type** Educational **Micro** Sinclair QL **Price** £14 95 **Supplier** Digitrix Wishingtons Porkellis Helston, Cornwall TR13 0LB

Program that will enable you to create your own educational material Allows series of pages to be created which can be multiple choice simple question and answer or text instruction

Spectrum

Program *The Tunisian Campaign* **Type** Strategy **Micro** Spectrum **Price** £9 95 **Supplier** CCS, 14 Langdon Way, Blackheath London SE3 7TL

Program *Dodgy Geezers* **Type** Adventure **Micro** Spectrum **Price** £7 95 **Supplier** 60 High Street, Hampton Wick Kingston Upon Thames Surrey KT1 4DB

Knock it on the head – very very very hard and maybe it ll go away As funny and tasteful as the Chas and Dave Christmas album

Program *Murder Off Miami* **Type** Adventure **Micro** Spectrum **Price** £7 95 **Supplier** CRL 9 Kings Yard Carpenters Road London F15 2HD

Program *Battlefield Germany* **Type** Strategy **Micro** Spectrum **Price** £12 95 **Supplier** PPS, 452 Stoney Stanton Road Coventry CV6 5DG

Program *Trivial Pursuit – Young Players Version* **Type** Quiz **Micro** Spectrum **Price** £14 95 (or £7 95 as data set) **Supplier** Domark 24 Worple Road London SW20 8PN

Program Defcom **Type** Arcade **Micro** Spectrum **Price** £8 95 **Supplier** Quicksilva, Argus Press Software Victory House Leicester Place, London WC2H 7NS

Program *Footballer of the Year* **Type** Strategy/Arcade **Micro** Spectrum **Price** £7 95 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS

Program *Bargain Basement* **Type** Arcade **Micro** Spectrum **Price** £1 99 **Supplier** Sparklers Unit B11 Armstrong Mall, Southwood Summit Centre, Southwood, Farnborough, Hants GU11 0NP

Program *Terra Cresta* **Type** Arcade **Micro** Spectrum **Price** £7 95 **Supplier** Imagine 6 Central Street Manchester M2 5NS

Program *Top Gun* **Type** Arcade **Micro** Spectrum **Price** £7 95 **Supplier** Ocean 6 Central Street Manchester M2 5NS

All-action and no plot in this film tie-in Just like the movie First two player flight/combat simulator I ve seen for ages though

Program *Golf* **Type** Simulation **Micro** Spectrum **Price** £7 95 **Supplier** Imagine 6 Central Street Manchester M2 5NS

When you think about it there aren t many good *Leaderboard* style games on the Spectrum Mastertronic s *Hole in One* was a game attempt, but *Golf* from Imagine manages a bit better When you ve worked it out the control system is fairly easy to use and the whole thing plays well enough over the nine holes of the Konami Country Club course Still not a patch on Commodore *Leaderboard*, however

Program *Super Soccer* **Type** Arcade **Micro** Spectrum **Price** £6 95 **Supplier** Imagine 6 Central Street Manchester M2 5NS

Most like there hasn t been an excellent golf game for the Spectrum yet, thee hasn t been an excellent football game yet Startling, isn t it that the best to date (*Match Pay* from Ocean) is getting very long in the tooth I was hoping *Super Soccer* would remedy that

They ve made it complex enough in fact the hints and tips box has Read the instructions splattered on it in red capitals It has some nice ideas – you can set up team positioning for set pieces But the implementation is dire

The slow cranky animation suggests that it s the Stanley Matthews XI out there on the filed – or maybe the Leeds 1981 squad Altogether now – (singing) relegation relegation

Program *Jail Break* **Type** Arcade **Micro** Spectrum **Price** £7 95 **Supplier** Konami via Nemesis Management, PO Box 67 London SW11 1BS

Playing the word game

But can a home computer do the *Guardian* crossword? asked Ziggurat November 6 Well yes it can is the answer, with the assistance of a neat little program I ve discovered called *Wordfinder*

Now before you plunge into deep depression as another area of your life is taken over by computers let us be accurate *Wordfinder* and presumably other programs like it though I have not come across any will give you considerable assistance in solving a crossword it will not do it on its own And what it will and won t do tells us something about how (and whether) machines think

Consider a very simple crossword clue very large (8) and suppose that we know that the third and sixth letters are both o You and I would tackle this by thinking of all the words that we con nected with very large gigantic huge giant Most of these we can reject and sooner (or later) we settle on enormous

A different approach would be to take down the dictionary, start on page one and simply look for all the words of the type --o--o-- This would give us plenty of wrong answers (broccoli glorious) but it would also re mind us of some words that did not spring to mind This is what *Wordfinder* does, it consists of a large store of words and a routine which searches this store looking for any pattern you desire at a rate of about 5000 words per second

The computer stores and manipulates information very efficiently but cannot recog nise the right answer when it sees it in contrast we have difficulty thinking up possible answers but recognise the correct one because we have lots of connections between the information in our brains

If you doubt the inefficiency of the human brain at storing and retrieving data try this test think of all the words you can with five letters of which the second is t and the fifth is e If you can think of 14 in less than half a second you are doing better than the computer If you want help, look at the bottom of the page

Anagrams are another area where this kind of program can help How humans ever do anagrams is astonishing Certainly not by thinking of all the possible permutations of a set of letters and seeing whether any are familiar More likely, we recognise letter patterns that are common (-ing scr-) and then look for inspiration among the remaining letters

Oddly we are quite good at it – but we don t tackle it very logically *Wordfinder* can search its vocabulary for ana grams very rapidly, and systematically so it would find an anagram for bedroom Word assocation may not help – answer at the bottom of the page again

You can even provide the program with less detailed information about a word and ask it to make sugges tions Consider a more difficult clue ten with a girl is appropriate (5) Crossword experts will realise that ten might well be the Roman nu meral X and we are then looking for a girl s name to add to that making a word that means appropriate

What would fit? Well we can ask the program for all the five letter words with an X in them just one of them turns out to fit the bill

Answer below again but this one is cryptic, you probably had the wrong meaning for appropriate so word association was leading you the wrong way

And that shows neatly the contrasting ways of machines and men The computer couldn t interpret the clues we did that It came up with some ideas and we decided which was right It gave answers which word association wouldn t produce but that is valuable because crossword setters often try to get us thinking on the wrong lines Computers haven t replaced us but they can make valuable allies

Answers to the puzzles

-t--e atone stage stake
stale stare state
steve stile stoke
stole stone store
stove style

bedroom anagram boredom
cryptic appropriate annex
(appropriate the verb!)

P R Scott

NEXT WEEK

Micronet 800

Steve Gold reviews Micronet s newest multi player game *Shades* with some tips on gameplay and infor mation on how to join the network

Strategy games

Never fashionable, but always attracting a dedi cated following We look into the joys of conquering the world in strategy games

Arcade Action

More tips from The Happy Hackers including *The Last V8*, *Alien Highway* and *Gyroscope*

Spectrum disassembler

A full disassembler for the Spectrum 128/Plus 2 for you to type in Plus, speed up your QL s graphic com mands with our listing

The next issue of *Popular Computing Weekly* will be on sale from December 31

Lastly, it only remains for all of us here at *Popular* to wish all of you a very Happy Christmas We ll be back just before the New Year

Hackers



ONLY THE BRAVEST FLY....
TOMAHAWK
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